In This Issue

THE ROBOT TECHNOCRAT

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WONDER Stories

HUGO GERNSBACK
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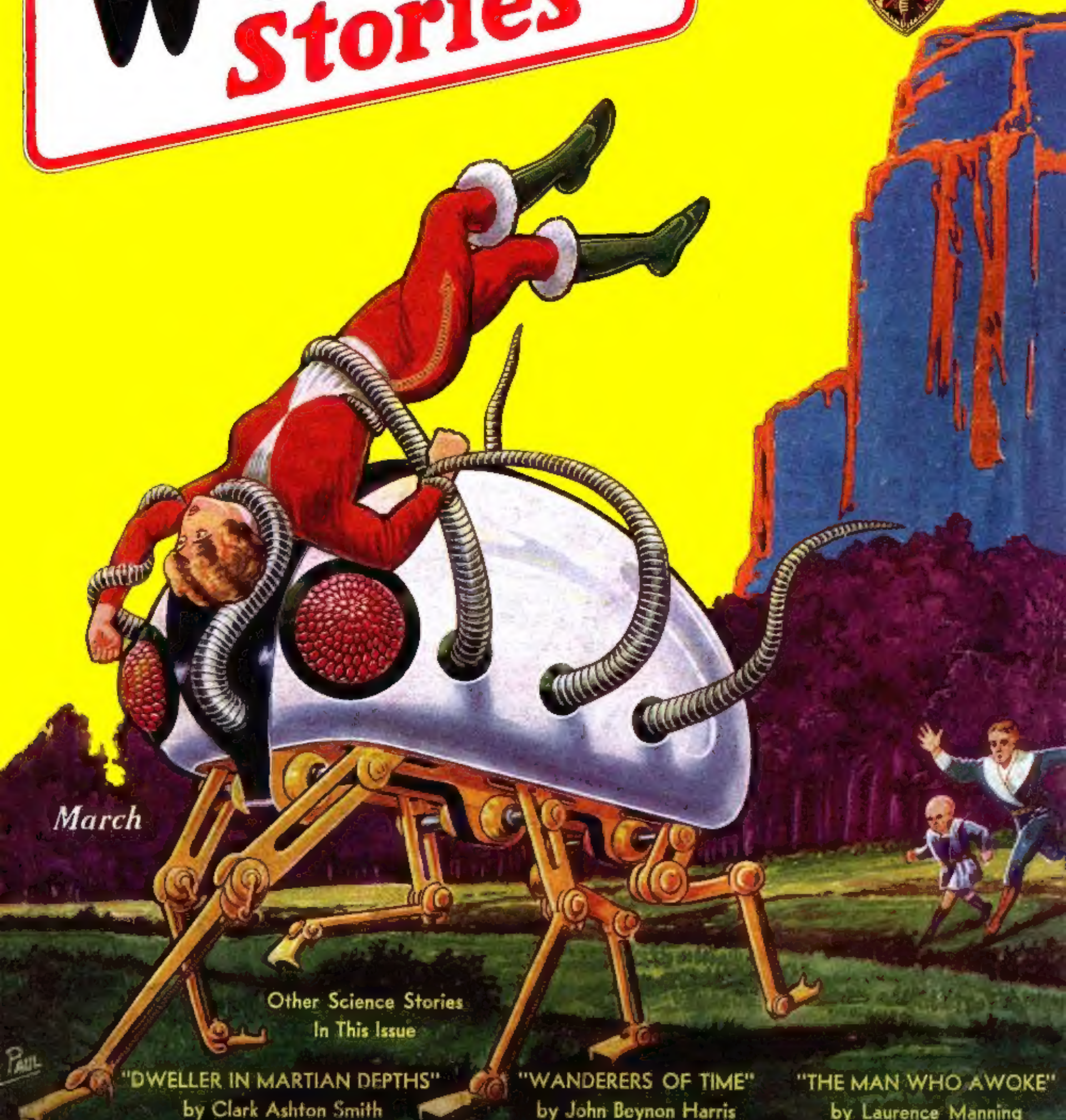

March

Other Science Stories
In This Issue

"DWELLER IN MARTIAN DEPTHS"
by Clark Ashton Smith

"WANDERERS OF TIME"
by John Beynon Harris

"THE MAN WHO AWOKE"
by Laurence Manning

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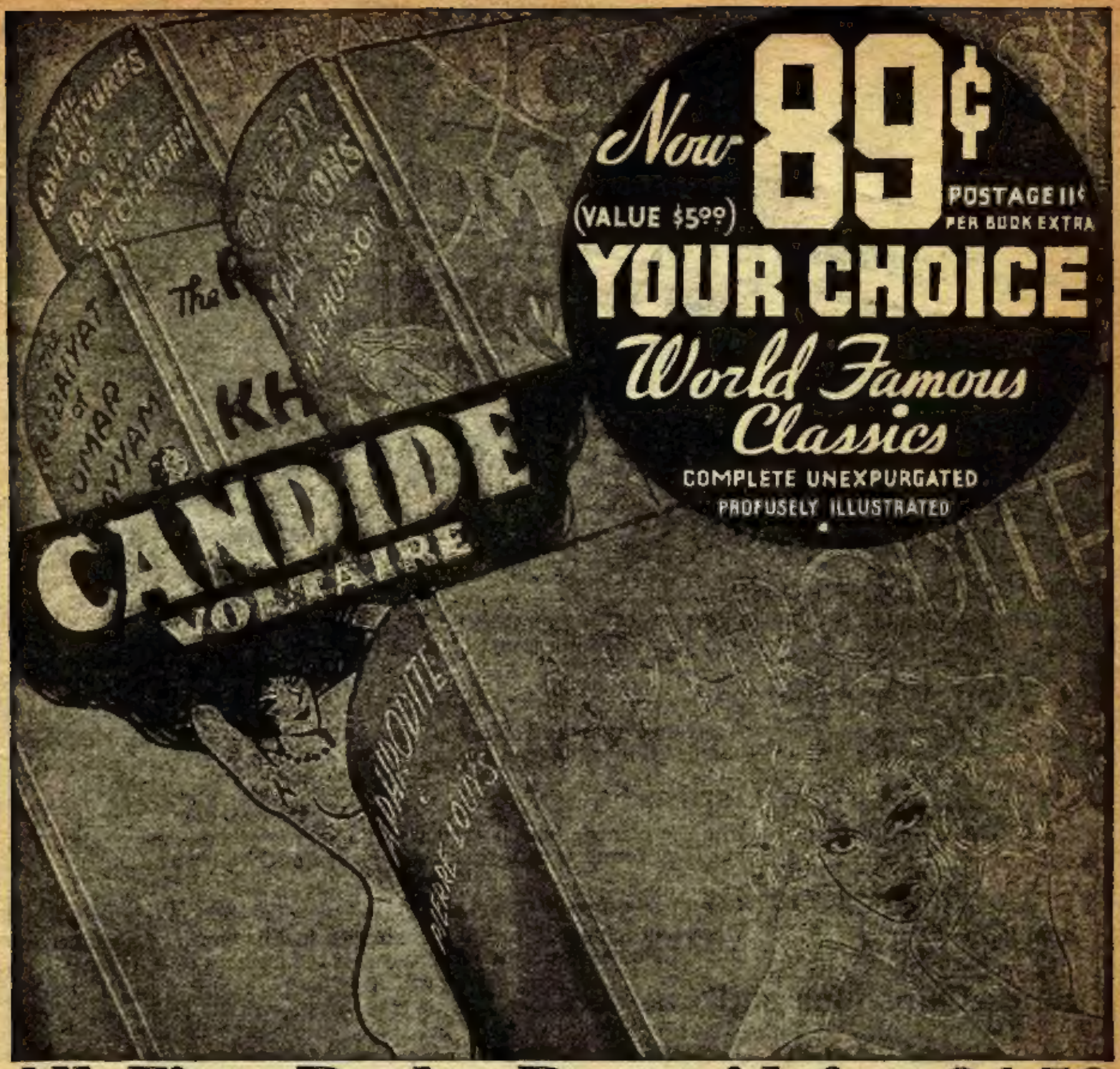

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The Magazine of Prophetic Fiction

WONDER Stories

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The continuation of the "unfinished story" "The Moon Doom" was crowded from this issue. It will be resumed in the next issue.

On the Cover This Month

taken from John Beynon Harris' exciting story "Wanderers of Time," we see the machine, operated from some strange source, carrying off to its cavern the woman time-explorer. The brain that operates these mechanical monsters is still to be discovered.

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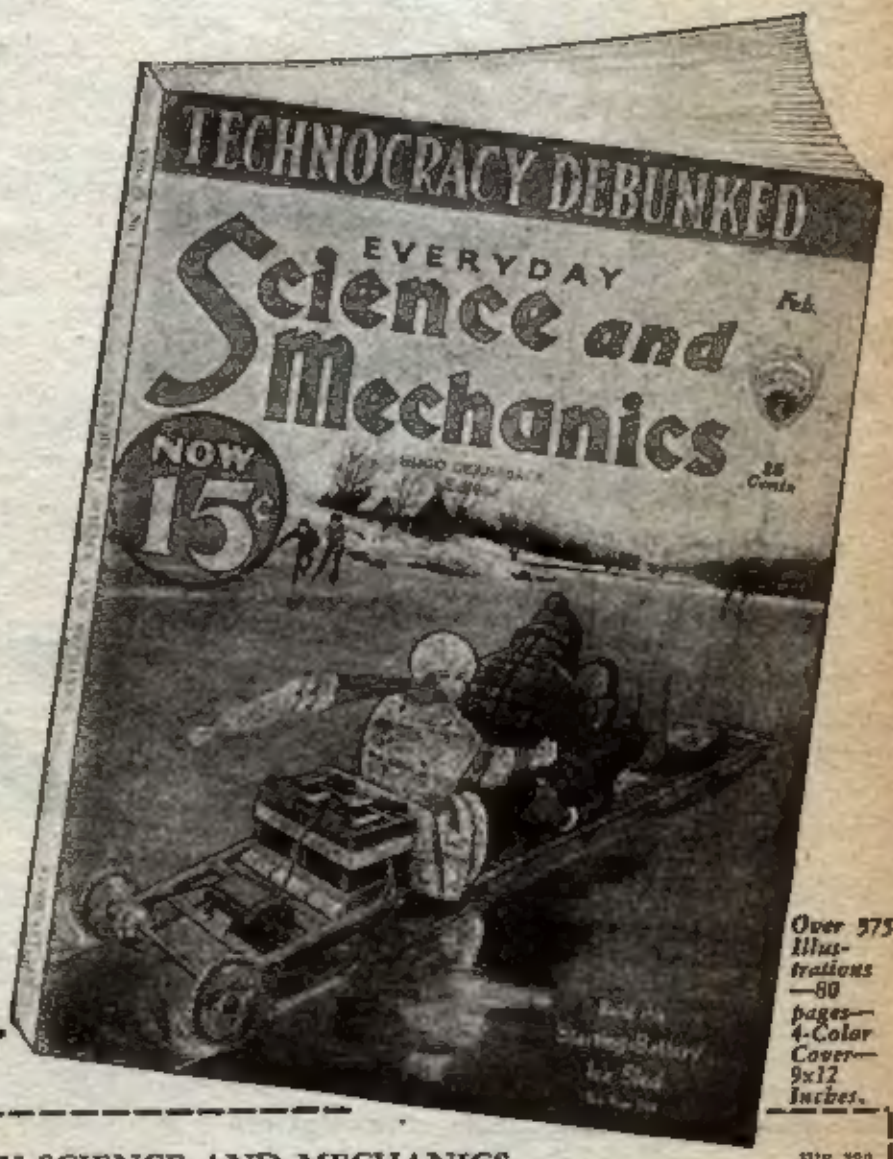

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ARE THE TECHNOCRATS GENIUSES OR FRAUDS ?

● **THEY HAVE BEEN HAILED AS BOTH. Do they plan merely to change over our economic system, or are they trying to set up a soviet of engineers? How far will they go; can they go?**

IS THE MACHINE RESPONSIBLE FOR UNEMPLOYMENT?

Should we have more machines or less? Is the price system played out? Should we have electric dollars or gold? Do we need a "new deal" or a revolution? Where is it coming from?

The whole gamut of these social, economic and political problems OPENED BY TECHNOCRACY are discussed WISELY—PUNGENTLY—CLEARLY—in this and future issues of

TECHNOCRACY REVIEW

ON ALL NEWS-STANDS

EDITORIAL PAGE

MARCH, 1933

Volume 4 Number 10

WONDER Stories

HUGO GERNSBACK
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WONDERS OF TECHNOCRACY

An Editorial by Hugo Gernsback

● Now that the world has suddenly become Technocracy-minded, the average reader of WONDER STORIES will probably look on the furor as rather strange. So far as the aims and aspirations of Technocracy are concerned, they are nothing new to science fiction. When the Technocrats tell us that our economic system is all wrong, and is obsolete, an anticipation of this can be found in the writer's book, "Ralph 124C 41-+" (written in 1911) under the chapter, "No More Money." When Technocracy tell us that we will shortly have to adopt a four-hour working day for five days a week, this is not news to science fiction readers either. Hundreds of stories have treated on this point. Indeed, there is very little that Technocracy offers which has not been anticipated in stories from H. G. Wells down to last month's issue of WONDER STORIES.

Every reader of science fiction has lived in the future so long, that he is probably amused that the rest of the country has found a new plaything in Technocracy.

Everything that the machine age has to offer, many of the possibilities arising from the reign of the machine, have been anticipated by authors of science fiction for many years. Indeed, it would be most interesting to take every statement made now by spokesmen of Technocracy and check up on some of the past science fiction stories. I am certain that practically all the statements now made can easily be found in the writings of our authors.

And that, of course, shows vividly that the great mission of science fiction is becoming more recognized, day by day. This is the triumph of our readers over those who scorned science fiction. If science fiction can make serious people sit up and take notice, and THINK about the future of humanity, it will have accomplished a tremendous good.

We all know that the system under which we live is wrong. We are just muddling around, trusting to luck that something will happen that will put us on the right track again. The present order of civilization is highly unscientific, and when we contemplate our cycles of prosperity, followed by cycles of abject depression, every thinking individual must come to the conclusion that we have failed somewhere. When people are starving in the midst of plenty, when for the first time in the history of the human race it becomes possible for humanity to labor but a short fraction of its time and have leisure for a larger percentage of its time, then, indeed, we know that something must be done about it.

As I have pointed out many times before, the machine is beneficial, and it will be the machine which, in the end, will completely emancipate man. The thing that is wrong is our economic system, and our present money system. No doubt, as Technocrats put it, these are worn out and need a new control to gear them up to our machine age.

Technocracy wants to do away with our capitalistic order, and wishes to substitute in lieu of money, certificates issued to each individual, giving him a part of the available energy. In other words, if the net energy available every day is 75 kilowatt-hours per person, each person will be given in wages each day an energy certificate worth 75 kilowatt-hours, which will be spendable "money." This certificate will then be presumably exchangeable at banks, stores, or otherwise, for necessities of life, etc. All goods would be priced in kilowatt-hours of energy instead of dollars. The more energy available (net energy of course) the more energy certificates you would get.

Under our present civilization there is not a thing that man can do without consuming energy. If your electric alarm clock rings you in the morning, it uses a certain amount of energy. You make your breakfast, which requires a certain amount of energy to produce. And to get the ingredients to you by railroad, ship, or car, again consumes energy. The newspaper which you read requires a definite amount of energy to produce, and so on down the line. The more educated we are, the more highly civilized we become, the more our wants,—the more energy we consume. Modern man, in contrast to the aborigine, for instance, uses hundreds of times as much energy as the latter.

Naturally, under the Technocratic system, everyone would not have *absolutely* the same income. A man's income would be based not only on the energy available, but also on his individual needs.

Whether this will work out, or whether Technocracy is only a theoretical idea, only the future can tell.

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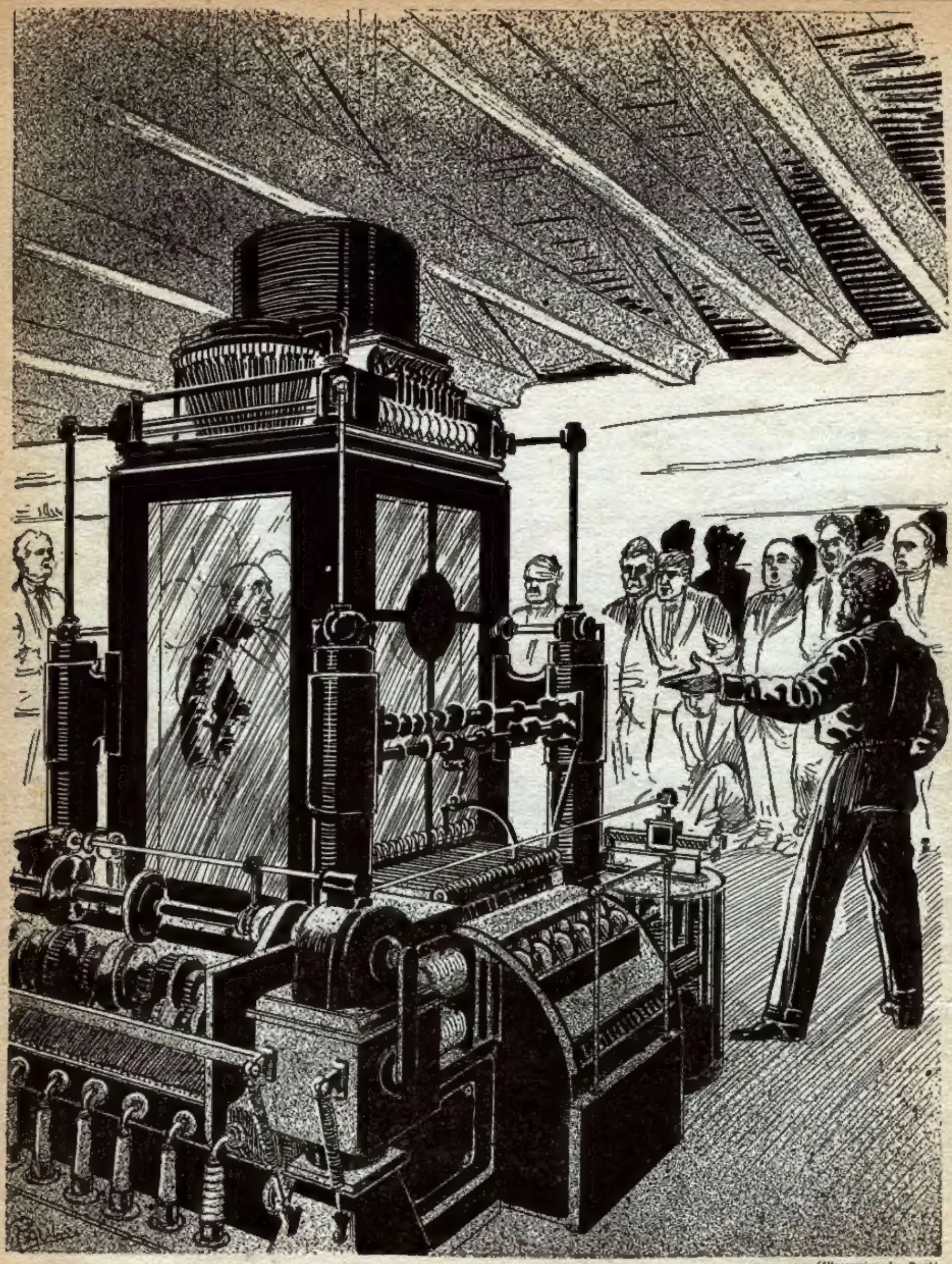

(Illustration by Paul)

Suddenly there was a click and a queer mechanical voice filled the room. It had no human quality . . . It spoke in disconnected words and phrases. "Power . . . terror and destruction," the voice intoned.

THE ROBOT TECHNOCRAT

BY NATHAN SCHACHNER

● The Technocracy movement has proved one thing, and all factions in our country are admitting it—that we need the application of the same science to our government and economics that we use in building machines.

Certainly now, as never, we need guidance, we need to know what the results of our actions will be in every sphere of life.

The Technocrats propose for this a series of charts showing the changes in various phases of our life. Then, they believe, they can predict what will happen in the future.

This thrilling story built around the Technocracy idea, carries it further with some astonishing results. And yet is it too far-fetched to say that the exciting events pictured by Mr. Schachner will never come to pass? Stranger things have already happened.

● The great car roared over the battered concrete of the Pennsylvania highway, its long sleek nose bobbing as it hurtled over particularly vicious ruts, its armored tonneau groaning at the speed of its flight.

The four men within were in a hurry, that was obvious. The chauffeur, khaki-clad, held on to the wheel in grim silence. The jagged road, rising and sinking over the long slopes of the Poconos, had once been a national highway. But then, so had thousands of other arteries of travel through the nation, now similarly in utter disrepair.

The youngest man of the three in the rear twisted around to stare through the bullet-proofed glass at the tiny village they had just quitted. It was in flames, a dull, smoky glare against a darkening sky.

"They almost had us down there, sir," he said, a faint dancing light in his reminiscent blue eyes. He was young, painfully young, was Peter Rashdell, seeing only joyous adventure in the threatened debacle of civilization in that year of grace, 1954.

Hugh Corbin, his chief, and leader of the Reconstruction Party, nodded absently, his pale, deep-shadowed eyes staring fixedly on the plunging road ahead. It was impossible to talk just then. But when a comparatively smooth stretch intervened, the third man, a silver star showing on the epaulettes of his soldier's khaki, burst out irritably.

"Damn it, Corbin, why didn't you let me give the beggars a dose of steel? Soldiers, hell! Damned bandits, that's all they are."

"You forget, General," Corbin said placatingly, "they wore the uniform of the National Party, and Hiller's nibbling at our proposals. If we'd shot them up, and been recognized, it would have meant the end of months of delicate negotiations."

General Wingdale removed his *kepi*, mopped a bald pinkish pate.

"T'hell with your negotiations!" he retorted profanely. "Don't you see you're being used as a catspaw for every ambitious two-by-four party in the country? Let one get smashed in a fight, and right away its leader thinks of Corbin and the Reconstructionists. He has seen the light, he announces, sweet reasonableness is the thing; no more roughneck fighting and looting in the name of politics, and good old Corbin pulls the chestnuts out of the fire. You *have* quite a following, you know, though for the life of me I don't see why. And I'm silly ass enough to stick with you."

Corbin's thin delicate features wreathed into a weary smile.

"That's because you know our plan for pulling the world out of its present savagery and semi-ruin is the best. Reason and education are what are required, not the use of brute force. We've had enough of that."

"Tommyrot!" Wingdale exploded. "It's over twenty years since the world started on the skids. And it's sliding faster than ever. Look at Europe; dictatorship after dictatorship! France, Germany and Italy, Fascist; Russia, England and Jugoslavia, Communist. Six of one and half a dozen of the other. All fighting each other, mixed up in a general dog-fight. Look at our own country! A dozen different parties, each claiming to be God's anointed, each with its hordes of uniformed bandits, so-called soldiers. There's no war here, at least, not officially. But every month or so there's a pitched battle, thousands are killed, and the defeated crowd call on you to intervene, to restore the peace you love so much.

"And in between irregulars roam the country, burning, killing. America has become a smoking ruin. Give it five years more, and there won't be any people left to instil with sweet reasonableness and the economic verities of your plan. I tell you, Hugh, we need a strong hand. Give me the word; my troops are soldiers, not rabble; and I'll clean this scum off the earth. Then you can try your fine plan."

Young Rashdell was moved. The General's passionate words fired his youth and enthusiasm. He had never seen the old soldier so wrought up before. The bald head glowed faintly in the bobbing gloom. Outside, the darkening countryside slipped by, deserted; pricked here and there by the smoldering red of a burnt-out farm house.

Corbin grimaced painfully. "Force! force! The panacea for all ills! Yet you have answered yourself. The dictatorships in Europe and Asia, are they not the glorified resultants of force? And what are they doing? Annihilating each other, making waste places for jackals and hyenas to laugh in at human stupidity. Hasn't there been continual fighting here for over ten years?"

He threw his arms up in a sudden gesture as the car roared unevenly onward.

"If only the factions could see things clearly. We must rebuild the machines that the masses destroyed in their blind rage against overproduction. We must repair the wreckage of twenty years, and then *co-operate!* See to it that every man, woman and child in the country gets a fair share of the machine's products. The machine was not to blame, only we who handled it. But that presupposes statesmen, and the party leaders are just ambitious self-seekers, ready to sacrifice the people to their lust for power. We need a new deal; a new vision; possibly a new plan. That's why we're on this road now."

● "And damned silly of us too," Wingdale grumbled.

"This Kalem—"

"Kalmikoff; Anton Kalmikoff."

"A Russian!" The old soldier's voice held forthright scorn. "Discovered a way to save the world! More crazy panaceas of crack-brained enthusiasts. More likely he's in the pay of Michael Gelb, the Communist."

Corbin shook his head. "Kalmikoff is a great man; a genius. I knew him twenty odd years ago as a comparatively young man. I was a student then and he an instructor in mathematics. He would go far, it was predicted.

"He did. When he disappeared in '35, he was already the world's greatest mathematician. The new Schrodinger wave-mechanics differentials were elementary to him. He had advanced far beyond where no other mathematician has been able to follow. And he was working at the social sciences too, strangely enough. Then he disappeared and was never found. Everyone thought him dead; so did I, until he sent me that note."

"And that note started us on this wild-goose chase," said the general. He quoted sarcastically. " 'I remember you as a keen student of mine; I've heard of you since. Your ideas are not bad, but I have an infallible method for saving civilization. Remember Technocracy. Come at once.' And that's all; just his signature and directions. An addled fanatic! Reverting again to that Technocracy bugaboo."

"No," Corbin responded seriously. "I *knew* the man. It was some great research that made him leave fame, fortune, everything behind. But we're almost there."

They were breasting a hill, wooded, wild, infinitely deserted. A ruinous stone windmill thrust gaunt fingers against a slate-gray sky. The white radiance of the headlamps made it a bleached skeleton. It was quite dark now.

"That's the landmark," said Corbin. He leaned forward to the silent chauffeur. "There should be a dirt road leading to the left on the other side of the windmill. Take it, Withers."

The chauffeur barely nodded, kept his eyes glued ahead. The great car had slowed down. A faint winding streak lost itself in the depths of black trees. Withers slewed the car around, proceeded cautiously down the rutty narrow path. The forest hemmed them in, murmurous, black, forbidding. The fresh night wind fanned their cheeks. Rashdell had lowered a window. There was a slight prickling up and down his spine.

"What's that?" he cried suddenly, sharply. Sounds bore down upon them, confused struggling sounds. Then, unmistakably, the quick staccato bark of a dynol pistol. Loud shouting, and the crash of guns.

The general looked grimly at Corbin, pressed a button. The interior of the car glowed with "cold light." He bent down and twisted a handle. A section of the floor board slid smoothly aside, disclosing banks of gleaming buttons.

"A trap; we're ambushed!" he said briefly. "Withers," he went on sharply, "back up as fast as you can. Rashdell, close that window."

Peter Rashdell had his gun in hand, peering with choking heart ahead. Flashes blinded in the distance; the deadly ping-ping of spray guns punctuated the intermittent deeper roar of the dynols.

"Not really," he almost sobbed his disappointment. His first fight, and the general was retreating.

"Of course," the old campaigner spoke brusquely. "That letter was a plant; I expected as much. No use getting killed."

Already Withers with skilled touch was maneuvering the car back over the twisting road. Corbin seemed to awaken from the paralysis that had struck him at the first outburst.

"Stop!" Corbin almost shouted. "Go ahead, as fast as you can. Kalmikoff's no traitor. He's being attacked, killed, I tell you."

Wingdale chuckled. "The pacifist turns warlike. All right, trap or no trap; we'll soon see."

He snapped off the light. "Let her go, Withers. Duck, everybody."

The armored car roared into life. Its twin headlamps bored dazzling cones into massed trees. Withers crouched over the wheel, and drove her at nightmarish speed over the bumpy trail. The three men in the back held heads low, bumping and careening as the car crashed and banged its way along. A dim glow illumined the banked buttons under the floorboard. Corbin was breathing heavily; Peter's heart did queer things in the neighborhood of his throat.

The old general sensed his excitement.

"Scared, son?"

"Yes," was the frank answer. "But I wouldn't miss it for anything."

"I know," he nodded understandingly. " I felt like that in my first battle—and many more after it too."

But Corbin only breathed: "Faster, faster."

Withers added to the already insane speed. He scraped trees with miraculous twists of his wrist, hurtled boulders with airplane-like leaps. The noise of battle was plainer now; the flashes more brilliant.

"Faster, faster!"

● There was an opening ahead; a building flamed redly.

Spurts of fire darted from another of the clustered buildings. Pitifully few! Silhouetted against the leaping flames were massed figures. A tremendous explosion of sound, followed by shoutings. The horde swarmed forward for the final triumphant attack.

Then the armored car catapulted into the clearing, a roaring, rocking Juggernaut of destruction. Twin beams caught the scene, etched it dazzlingly against a background of flame and black jagged hills. The attackers wheeled to meet the new menace; guns thrust up to uniformed shoulders. There were hundreds of them.

Withers ground the accelerator to the floorboard. Shots slammed into the armored sides; a dynol shell smashed a window into starred splinters.

The heavy car staggered under the impacts, and shot

forward. Screams of pain as men were plowed into the ground.

Wingdale crouched, humming coolly to himself. He stabbed downward with quick fingers, pressed button after button. The car suddenly wreathed itself in flame and smoke like a fire-snorting dragon. Tremendous concussions followed. Those buttons touched off batteries of dynol and spray guns whose snouts were hidden by the overhang of the chassis.

The thick spew of missiles cut through the massed men like a reaper through standing grain. The survivors wavered and broke for shelter. Some few only ran toward an innocent-looking funnel-shaped affair, squat on the ground near the edge of the clearing.

Wingdale stood up as the car came to a grinding halt and saw them.

"Swing around fast, Withers," he cried urgently. "If they get that flame-thrower on us, it'll go through us like melted butter."

The car ripped through its gears, slithered and slid on the bloody, uneven ground without traction. Already the men were slewing the flame-thrower around, pointing its ugly snout toward the defenseless car. Peter rose from his crouch, thrust open a window. The dynol pistol was in his hand.

"Down, you fool," Wingdale plucked at him. "They'll riddle you."

But the pistol was roaring its stream of explosive bullets. Two of the men around the flame-thrower went down, the others broke and ran. There was an answering hail of bullets. Peter jerked violently, slid downward.

"They got you, Peter!" Corbin's voice was anguished.

"N-no, sir. Just a crease. It stunned me for a moment," Rashdell laughed shakily.

Already more men were dashing for the flame-thrower, but Withers had completed his maneuver. The car faced around. The general chuckled grimly, pressed buttons. A whistling stream ripped through the running men, caught the funnel thing, smashed it into twisted steel; then with a great roar it exploded into a geyser of fuming flame. That was the end. The remnants of the marauding force fled in wild disorder.

Corbin had already flung the door wide open, and was running toward the large four-square log building from which the shots had come.

"Damn fool," Wingdale grumbled, but he did not hesitate a moment in jumping actively to the ground, pistol in hand. Peter raced silently by his side.

"Kalmikoff," Corbin was calling. "Are you alive?"

A heavy-beamed door swung cautiously open, a muffled invisible voice queried: "Who are you?"

"Hugh Corbin."

"A-ah!"

The door thrust wider, and a huge figure stood silhouetted a moment against the interior glow, then moved quickly into the outer darkness to grasp Corbin's hand in a bearlike grip.

"Welcome, my friend; you come most opportunely. Those devils almost had us."

The red flames of the burning structure disclosed a straight-backed giant unbowed by his years, tawny of hair and beard. He cast a quick glance of inquiry at Corbin's companions.

"My Chief of Staff, General Wingdale, and Peter Rashdell, my secretary."

Kalmikoff boomed greetings. Somehow his faintest whisper seemed like the rushing of a torrent.

"You will excuse me," he said, "but the fire; it must be put out. I have valuable apparatus in there." He raised his voice. "Brusson, Hawkes, Marinelli; bring extinguishers."

Three men came out into the darkness, carrying tiny tubes. The building was a mass of flames now, but the first thin spurts of the carboxydol fluid smothered the fire under a wide-spreading blanket of incombustible fumes. In half a minute it was out.

Kalmikoff made a queer gesture. "Those three, all I have left of my assistants. Half a dozen more, dead, killed in the first attack."

He surveyed the shambles somberly, yet without vindictiveness.

"Who are these men? Why did they wish to kill me?"

Wingdale was already flashing his torch over the sprawled bodies. He straightened up and answered quietly. "They're Hiller's men. Green uniforms and all."

Kalmikoff looked bewildered. "Hiller, leader of the Nationalists? But how does he know of me, what benefits—?"

Young Rashdell interrupted eagerly. "It's what I've been telling you, Mr. Corbin. There's a spy in our headquarters. Someone who saw Mr. Kalmikoff's note, and reported it to Hiller."

Hugh Corbin's face was suddenly haggard.

"He has been playing with me then," he said. "He evidently thought Kalmikoff had invented new and more powerful instruments of destruction."

"And haven't you?" Wingdale and Rashdell turned simultaneously on the Russian.

He looked startled for a moment, then smiled slowly. "No, my friends, I am not a man of war; my inventions are peaceful. But come inside; I have much to say. Marinelli, clean up this bloody mess. The stench will kill us."

CHAPTER II

The Robot Technocrat

● The dark-visaged Italian saluted silently. As Rashdell followed the others, he noted the three assistants swinging nozzles from which intensely white flames spurted in long thin streams. Each body touched was consumed to impalpable ash almost instantly.

Then he was inside, in a great log-walled room. A huge fireplace roared cheerfully at one end, bunks of Spartan simplicity were built into recessed alcoves; a long refectory table with continuous benches running completely around it occupied the center of the room. A few plain hewn chairs completed the furnishings.

"Our sleeping, eating and living quarters," Kalmikoff indicated with a smile. "We did not pamper ourselves these last nineteen years."

"But why did you disappear and immure yourself in this hiding place like any hermit of old?" Corbin asked curiously. "You were wealthy, famous, the world's greatest mathematician."

Kalmikoff smiled again, his great tawny beard waggling with the thunder of his voice. "Wealth, fortune, greatness, what are they? Poof! Ticklings for the groundlings. The important thing is science. I was too busy; teaching, writing, speaking at learned societies to ninnies who couldn't follow me. I discovered some things, yes. But the big thing I set my heart on, always eluded my grasp. I

had no time for clear thinking. And the world was beginning to slip. I saw chaos ahead. I had no illusions. The world needed what I had in mind; needed it quickly.

"So I went off into the woods, took with me carefully picked men. No one ever bothered us here; it is wild, untouched country. For nineteen years we labored, day and night. Nineteen years, and we have just finished. If any one can bring the world forward to real civilization, I can."

It was Corbin who voiced all their thoughts. "But Kalmikoff, what is the great thing you have discovered? Tell us quickly."

The big man quivered with silent laughter.

"Nineteen years I work, and you—you are impatient, hein! But I shall explain. We shall go into our workshop; I shall show you."

His three assistants filed silently into the room.

The dark Italian reported: "We have finished, Master."

"Good. Friend Corbin, this is Marinelli, my right hand. A mathematician almost as good as myself. I developed him. Hawkes," he was a tall, drawling down-east Yankee, "is my mechanician; a magician with tools. Brusson, my Gallic friend, a statistician. He collects figures with the passion that most of his countrymen collect mistresses." The trim little Frenchman bowed as though overwhelmed with the compliment.

Kalmikoff looked them over affectionately. "The others, they are dead. Let us go."

Out into the starlit night they trouped, carefully avoiding the little mounds of ash. There was no sign of the enemy; only the rustling trees hemmed them in. Rashdell wondered. What was it all about? The man was evidently not a mountebank.

Past the burnt odor of the gutted building, up to the wall of a greater log house set into a recess of the hillside. Kalmikoff carefully unlocked huge bolt after bolt, opened the massive door gently. He reached in and pressed a button. The interior flooded with light.

He moved to one side and bade them enter.

"My masterpiece!" he said.

They went in quickly, eagerly, not knowing what to expect, Rashdell modestly in the rear, but by far the most excited.

They paused abruptly near the threshold, and stared blankly. Supported on massive steel stanchions was a huge intricate mass of machinery. It filled half the immense chamber. Gears meshed on gears interminably, pinion racks held long series of rollers over flat steel surfaces; long steel styluses with inked points were held suspended by flexible arms over steel drawing boards on which lay virgin white sheets of composition paper.

Innumerable levers connected with great turning wheels underneath the stanchions, and thick cables ran to an auxiliary motor. Attached to one end of the machine was a banked keyboard, for all the world like a gigantic typewriter except for its multitudinous keys; at the other end a funnel opening like a loudspeaker. And most mysterious of all, a huge oblong box from which hundreds of fine wires ran into the depths of the machine. It looked comfortably able to house a man, reminding Peter of a televisor booth.

Corbin was the first to catch his breath. "But wh-what is it? What is it for?"

Kalmikoff grinned proudly.

"I shall commence from the beginning. Yes, that is the best way. I was a mathematician, a good one, hein?"

"The very best," Corbin assented gravely.

"When back in 1932 I witnessed the beginning of the failure of industrial civilization," the Russian continued, "I said to myself: 'Anton, you are a fool. What good is your mathematics if the world goes to pot?' So I started studying economics, psychology, ethics, sociology, everything that could make me understand what was happening to civilization, why the system was sagging. The more I studied, the more I saw what was missing. Everything was vague, nebulous; no economist, no sociologist, for instance, had clear cut ideas. And why, may I ask?"

● Young Peter shrugged slightly. "Go on and ask, old boy," he thought, "I can't help you out."

But the question was purely rhetorical. Kalmikoff answered himself with growing excitement.

"Because the idiots had no scientific basis for these theories, for their maunderings. Then came the announcement of the theories of Technocracy. And behold I saw the light. It was necessary, as Howard Scott said in those days, to apply science, rigid science to our social and economic life.

"But how did the Technocrats propose to do this? By charts, the stupids, just charts. I saw that that was insufficient. Charts were not exact enough; they were man-made things full of errors, and were interpreted stupidly. So I went to work, and behold, I found the answer. Human affairs, morals even, could be reduced to mathematical formulae. I made exact sciences where no science existed before."

General Wingdale ostentatiously mopped his bald head. He was bored with these irrelevancies. Why had they come out here?

But Kalmikoff was beyond heeding. And Corbin listened with strained attention.

"There was a formula that involved entirely new mathematics. Hamiltonian functions, relativity equations, were mere child's play. I reduced the course of human civilization to twenty variables; tendencies, lines of force that I expressed in new dynamic vectors. The equation is a masterpiece of analysis. Substitute for these variables, symbols that I invented for race, food supply, natural resources, climate, governmental form, and so on—and when the equation is solved, I can tell you exactly what the future course of a group of men, of a nation, of the world itself, will be, depending upon the universality of my variables. I reduced Technocracy to a real mathematical science. Change one or more of the variables; in other words, alter a certain set of conditions, and an entirely new picture of future events inevitably follows."

Sensation from his hearers. Even old Wingdale blinked rapidly at this.

"You mean, sir," Peter gasped, "that your equation can predict the future?"

Kalmikoff chuckled. "In a sense, yes. Human affairs are subject to the same inexorable laws that planets, for instance, are amenable to. Only because of the number of factors involved, these laws are infinitely more complex. I can not only predict the future from the present condition of the world, but I can show you, by changing

certain present factors, how to bring about, inexorably, mind you, a world nearer to your heart's desire."*

"Poppycock," the general burst out violently, his bald pate shining angrily.

But Corbin leaned forward with strangling eagerness. "The equation," he choked, "you have solved it?"

The big Russian clucked to himself.

"There was the rub, my friend. Twenty variables! Gott! When you consider that Einstein's famous World Equation had only ten, and *that* was unsolvable without most of the variables being first reduced to zero, you see the trouble. I had the equation, but no way to solve it. It was impossible."

"Then what—" Corbin commenced despairingly.

"I heard then of the mathematical 'Brain' machine evolved at the Massachusetts Institute of Technology for solving difficult differential equations.** That gave me my idea. I would make a greater machine to solve my equation. So I gathered together a band of assistants, each a specialist in his way, retired to this place for uninterrupted work, and started.

"I knew it would be a difficult task; it was more than that, it was staggering. First I built a replica of the Institute's machine from their plans. I studied it carefully. It was good in its simple way. But it meant days of constant manual labor, constant shifting of levers, manual tracing of the more complicated higher plane curves. I calculated that my equation, even if the machine could work it out, *would take over ten thousand hours of solid working time for its solution!*"

● Wingdale snorted derisively.

"Manifestly that was unthinkable," Kalmikoff continued. "And in any event, it couldn't handle my variables. For two years we worked steadily, building, experimenting, machining tons of metal into intricate working parts. At the end of that time, I had something that could solve five variables! *And I had twenty!*

"My men were discouraged, but I kept them at it, year in and year out. I was in touch with the outside world; news of the desperate revolts all over the world came to my ears, the idiotic smashing of factories; the chaos, the starvation, the plagues that infested the race, all that Technocracy had predicted. I saw parties spring up and submerge as quickly, internecine fighting, the maddened people tearing at each other's throats in frenzies of hate, every one accusing his neighbor of responsibility for the general ruin.

"At the end of ten years I had a huger, more complicated machine. I rubbed my hands. Maybe this one would work. We couldn't sleep all that night, excited about the test the next day. At dawn some one shouted. We sprang to our feet, rushed out naked as we were, into the cold winter night. The laboratory housing the machine was a mass of flames. By the time we put it out, all that was left was a mass of twisted metal."

The scientist shuddered at his own recollections. Rashdell felt a sudden wave of sympathy for the man.

"What did you then?" he asked eagerly.

The Russian looked surprised. "Do?" he echoed. "Why, we set to work the next day to rebuild. Our plans had been destroyed; we had to make our calculations all over again. In four more years it was finished." He paused a moment.

"And—" Corbin queried in his impatience.

"It didn't solve our equation," Kalmikoff answered simply. "So we started again. Two and a half years more. Then Hawkes invented a minute cog that set the styluses tracing the incredible curves required by our equation. Two weeks ago it was installed. We tested it, hearts hammering. *It worked!* The 'Brain' machine was an accomplished fact—the equation was capable of solution!"

The big Russian looked around the room and enunciated slowly, as though he were weighing each word, "I have every variable calculated for the future development of forces in the United States except one. Give me that factor in proper form, and the 'Brain' machine will operate before your eyes."

Tenseness descended on the little group. Even Wingdale seemed impressed.

"And that factor is—?" Corbin broke the pregnant silence.

"A composite of the physical and mental reactions of all of the eleven leaders of the party factions now fighting for control of the country."

Wingdale chuckled hoarsely.

"And how, Sir Inventor," he demanded sarcastically, "are you going to determine the state of these gentry's emotions?"

"Very simply," Kalmikoff answered calmly. "I place each individual in the physio-psych-graph you see attached to the machine," he pointed to the oblong booth, "and every reaction will be automatically recorded. The composite of their reactions will supply the missing factor."

Now he had his sensation. Even Corbin, anxious to believe, was taken aback. As for old Wingdale, dignified and portly, he doubled up in a choking fit of laughter that left him red and gasping.

"I knew it," he stuttered as soon as he could catch his breath. "I knew it! Every inventor is crack-brained. Why don't you ask for the moon?"

The big Russian did not seem at all perturbed.

"It was because of this factor that I called upon Mr. Corbin; otherwise there would have been no necessity. I could have solved the equation and announced the results to the world."

"Which of course would have believed you," the general commented sarcastically.

Corbin glanced at him helplessly. "But what can I do?"

Then it was that young Peter Rashdell, who had gaped openmouthed a while before, made his startling suggestion.

"I have it," he cried. "Let us kidnap the leaders and bring them here."

Wingdale glared at the boy. "Why, you infernal young puppy, you—"

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*Lest the sceptical reader think that this conception is but another pseudo-science dream of an irresponsible author, let him refer to a very serious little volume issued in 1929 by the Johns Hopkins University Press and backed with the august approval of the Research Department of that famous university. Its name is "From the Physical to the Social Sciences" and its author a distinguished mathematician and student of the social sciences, Jacques Rueff. Let me quote: "Moral or economic laws are immutable . . . Thus in present state of life, such and such circumstances are present, and such and such laws permit us to foretell phenomena resulting therefrom. It is the knowledge of the initial conditions that makes us choose in the arsenal of empirical laws those which it is fitting to apply. And if in the course of the evolution of our world, certain circumstances should cease to be present the laws permitting us to deduce therefrom the resulting phenomena would evidently cease to apply. They would no longer have any current reality but they would be none the less true."

M. Rueff argues strongly for the validity of a mathematical treatment of the social sciences, and actually proceeds to deduce and solve some elementary economic laws by means of the calculus. I have taken the liberty to carry his ideas to a logical conclusion.

**See *Science News Letter*, November 19, 1932.

"Exactly," Kalmikoff's voice boomed in. "That is the solution."

"Don't you see, sir," Peter turned an eager face to his puzzled Chief. "It isn't as hard as it sounds. This is a particularly propitious moment. The Left Wing parties are holding a conference in Pittsburgh to discuss possibilities of combining their forces; the Right Wingers are doing the same in New York. It should be rather easy to make simultaneous swoops and scoop up all the leaders at once. A dozen determined men to each hotel where one of the leaders is *en suite;* fast armored cars waiting outside, and the deed is done."

Corbin shook his head slowly. He abhorred violence in any form; the very idea of kidnaping struck at the foundation of his beliefs.

But Wingdale suddenly snorted. "Damned if the young hound hasn't hit upon an idea! Not that I hold any truck with this fantastic machine of Kalmikoff's, but get the leaders in our grip, and we'll be in a position to dictate terms." His face lit up; he thumped the palm of one hand with balled fist. "By George, I'll do it. Let's see now; ten party leaders outside of Corbin here; that means ten detachments. Jones, Rumford, Jordan," he ran over his lieutenant's names hastily. "Eight only; I can take care of one—"

"Count me in for a Right Winger, general," Peter interposed hastily.

Old Wingdale eyed him keenly. "Done!" he said suddenly. "Come on, Rashdell, we're driving for Headquarters at once."

Hugh Corbin's face was a study in emotions. "But I say, Wingdale," he protested, "I'm giving no such orders. I won't—"

The general clapped him on the shoulder with hearty force. "You've given the order already, Hugh," he chuckled. "Your dammed pacifism hasn't got you anywhere; and I'm running this part of the show. You stay here, keep your friend company, and prepare to receive visitors. We'll have plenty for you by midnight tomorrow, or I miss my guess." He opened the door and yelled into the darkness. "Withers! Start the motor; we're going places. Come on, Rashdell." And grabbing the boy by the arm, he was out of the building like an avalanche. A moment later, they heard the car roaring into motion.

Corbin shifted his gaze from Kalmikoff's silent assistants to Kalmikoff himself.

"You are responsible for this mess," he accused.

"Of course. You shall see how important, how necessary it is." His blond beard waggled. "The general is all right, except that he underrates science."

CHAPTER III

Kidnaped!

● The next evening, war-torn, starving America was shocked out of its apathetic despair by a series of outrages that made all former sensations mild and tame in comparison. Promptly at midnight, and manifestly animated from a common source, the hotel suites in New York and Pittsburgh of the leaders of the great competing parties were simultaneously invaded by bands of armed, masked ruffians. They overawed or killed the various bodyguards, and spirited their frightened, pajama-clad victims away in swift, armored cars.

By the time pursuits were organized, the kidnaping cars had sped into oblivion. Automobiles, tanks, airplanes, were pressed by maddened partisans into service, but they proved of no avail. The earth seemed to have opened and swallowed the quarry.

Ten out of eleven heads of great parties had been kidnaped. Horrible, unbelievable! The radios, those still intact and functioning after years of confusion and industrial letdown, sputtered madly all through the night. The few remaining telegraph wires hummed with the news of the disaster. Swift auto and airplane couriers departed hastily to the four corners of the United States. By morning the whole world knew. The people, tired, anemic, apathetic even to looting and rioting, discussed the outrage with reawakened fervor. A wave of indignation swept over the country; every cross-corners seethed with excitement. The nation was leaderless, except for one lone leader!

Party Headquarters issued hourly bulletins, lashing their followers to foaming frenzy. The Reconstruction Party announced with much detail the outrageous abduction of that peerless leader, that notable statesman, that sole hope of an expectant world—Hugh Corbin! Done to death, no doubt, by bloodthirsty hirelings of an envious rival.

By noon the common fury of heretofore mutually inimical parties had merged into a clamorous baying for the blood of the author of this gigantic crime.

"Adolph Hiller! Adolph Hiller!" The name swelled on the nation's tongue to truly epic proportions of hate and bloodlust.

For the leader of the Nationalist Party had escaped the general disaster. He alone had not been kidnaped. Therefore, logically, he alone had engineered the affair. Thus the logic of the other parties, and it was as impeccable as many another "logical" condemnation on circumstantial evidence.

This denoument had orignally been unforeseen by either General Wingdale or the Assistant Chief of the Reconstruction Party to whom he had confided hurried details. But the Assistant was keen enough to see the possibilties after the event, and it was his skilful fishing in troubled waters that brought about the tremendous outcry against Hiller.

Ironically enough, it was young Rashdell's colossal blunder that was responsible for it all. He had taken upon himself the command of the detachment that was to take care of Hiller. They parked the car in the dark shadows of Forty-Fourth Street, some fifty paces from the tarnished entrance to the Hotel Massasoit. Hiller had established his headquarters there. Midtown New York in the long years of depression and industrial decay had become a somber affair; the famous white lights no longer twinkled.

With beating heart and overeager nervousness he stationed his band to either side of the dim lit lobby. He himself with four others were to seize Hiller, hustle him out.

All arrangements were made when a man, muffled against the keen autumn wind, walked suddenly out of the lobby. A Reconstruction Trooper, flattened against the shadowed wall, murmured jestingly to a comrade: "Funny if that bird was Hiller."

Peter, keyed abnormally by his first command, heard only the last part of the whisper. He jumped to conclusions. The soldier had recognized the man as Hiller.

He acted impulsively. He jumped forward, swung downward with the butt of his gun. The man collapsed without an outcry. The limp form was hustled into the waiting car, and they were miles out on the Jersey roads before the innocent victim came to and the error was discovered. It was too late then to do anything about it.

Nine sullen prisoners were borne by swift-rushing cars over mountains and plains, keeping ever to little-used back roads. The stars paled and the dawn wind blew cold by the time Wingdale himself, his captive, the gagged Extreme Communist leader, Michael Gelb, bumped into the clearing before Kalmikoff's log houses.

"Everyone here?" he demanded sharply of an openly petturbed Corbin and a jubilant Kalmikoff.

"One missing," said Corbin. Then he burst out: "You have done a damnable thing, General. You have ruined my plans for peaceful reconstruction completely."

"Nonsense," Wingdale retorted rudely. "We have the country in the hollow of our hands now. I'll make these so-called leaders listen to reason. Line them up and let me take a look at them."

Nine glowering, dishevelled men, hands still bound, were ungently thrust against the wall. Their kidnapers had not bothered to handle them with kid gloves; bandaged heads, cut faces, dried clots of blood told their story of resistance overcome.

● Wingdale surveyed them grimly. The brains of the nation! Bah! Leaders whose blind followings ran into the millions. Men who couldn't see beyond their own private ambitions, who had plunged the country into interminable strife to further them.

Michael Gelb, the Extreme Communist, red-haired and sullen; Joe Wozzek, Communist, darkly fiery; Bob Heywood, burly and one-eyed, the Socialist; Olaf Swanson, the Social-Laborite; Martin Henderson, pompous and paunchy, leader of the Middle Class party, Wellman of the Patriots, Wilfred Beck the Fascist, Stimson who favored Monarchy, and Devoe the Aristocrat. A hodgepodge of parties that well represented the confused thinking of the time.

"Where's Hiller?" Wingdale demanded suddenly. "And young Rashdell?"

"They haven't shown up yet?" Corbin looked worried.

"You'll be sorry for this outrage, damn you," Beck the Fascist shouted loudly. "My men will hang you."

A chorus of jumbled threats and blistering oaths rose from the others, as pent-up emotions were explosively released.

"Silence," the old general roared. "I hold the whip-hand, gentlemen, and you'll dance to my tune."

"But I say," Corbin protested weakly.

"Don't interfere," Wingdale wheeled and snapped at him. "You're a good chap, Hugh, and some of your ideas are not bad. But this thing has gotten over your head. I'm in command now."

Corbin flushed darkly, opened his mouth and closed it without saying anything.

Kalmikoff had watched the proceedings with an amused smile.

"You forget, General Wingdale, that we have a definite purpose in bringing these men here."

The fiery old warrior looked at him contemptuously.

"Your fantastic machine, you mean? We've gotten beyond your half-baked invention. Science is all right in its place, but these gentry will understand my language better."

There was almost softness in the booming voice. "Nevertheless, my general, the test shall be made. And no harm is to come to these men either. You understand?"

"Eh, what's that?" Wingdale was genuinely startled. Then he thrust back his head and roared. "Threatening me?"

"Call it that."

The general laughed until he choked. "You realize this place is in the hands of my men?"

"Nevertheless, I am in control."

Wingdale stared at the blond Russian as though seeing him for the first time. Then his hand went to the holster beneath his tunic.

"Drop it." Sharp, unmistakable, commanding.

His hand went slowly back to his side as he stared at a tiny tube that had suddenly appeared in Kalmikoff's hand. Shifting his gaze he saw similar weapons in the hands of the three ever-silent assistants, trained on his lieutenants. Corbin made weak, ineffectual gestures.

"I am sorry," Kalmikoff said pleasantly, "but my plans are too important to the world to be interfered with by a fire-eating warrior. Hawkes, I told you, was something of a mechanical genius. He contrived these weapons. They kill at any range. And since yesterday's attack we have not been idle. Guns are mounted to command the clearing. Any new assault would receive short shrift."

Something of admiration glinted in Wingdale's eyes. "I underrated you," he said simply. "What do you intend doing with us?"

"Nothing," was the prompt answer. "All that I wish is your word of honor that you will not interfere in my experiments, and you are free, as before."

● The general swallowed audibly, and took a step forward. He seized the Russian's free hand, pumped it vigorously. "By George, you are a *man*, and I thought you only a scientist. I'm beginning to believe your fool machine will actually work. You have my word."

Kalmikoff grinned. "I know it will. But where is Hiller? He's most important to the success of the experiment."

Wingdale frowned. "It's my fault. I shouldn't have sent young Rashdell. If anything happened to the boy—"

There was the sound of a car slithering to a stop outside. The next moment Peter, flushed and shamefaced, was telling his story of blunder and woe.

"Never mind," the old warrior said gently, "we'll get him yet."

"But the experiment!" cried Kalmikoff, his usual calm deserting him.

"Can't you substitute what we know of his ideas and character for his part in the equation?" Corbin queried. He had seemingly reconciled himself to these violent proceedings, was once more intellectually alert. "Remember, I have had sufficient contacts with the man to examine him closely. We've been negotiating personally for over three months."

Kalmikoff shook his head doubtfully. "It may prove feasible," he admitted. "In any event we can't help ourselves. Bring the prisoners into the laboratory."

Stark fear flickered in the captives' eyes. All this in-

comprehensible talk of experiments in which they evidently were to be unwilling subjects roused understandable terror. Were they to be sacrificed on the altar of inhuman scientific curiosity? What hideous tortures were they to undergo?

The they filed into the laboratory, and saw the great machine with its innumerable rollers and plucking steel parts, and the mysterious looking steel chamber, their worst fears were realized. Torture box with infernal instruments, styluses that looked like jabbing needles, levers like pincers to tear the flesh . . . Beck, the Fascist, slid gently to the floor in a dead faint. Deathly pallor went in waves over the faces of the others; only Bob Heywood, the Socialist, looked defiant as he shouted: "You damned beasts. Kill us and be done with it. I won't submit to the experiments."

Kalmikoff stood in front of the mathematical "Brain," resting one hand lovingly on its unfeeling steel.

"The experiment will go on whether you like it or not. But you need have no fear. There will be no physical violence done you. On the contrary, we who are gathered here are working in the interests of the country at large. All you gentlemen, at least in your public utterances, have maintained that the welfare of the country is paramount in your hearts. I am giving you an opportunity to prove it. This strange-looking machine will show you just what lies ahead, what must be expected from existing conditions, plus your leadership. I can also show you, by varying certain factors, how it would change the future. If the demonstration is convincing, I shall rely upon your whole-hearted cooperation in effecting the necessary changes in present-day factors."

Blank looks greeted him. Was the man mad or meditating a deep-laid plan under these lunacies?

But Kalmikoff had already plunged into a detailed explanation of his theories of the social sciences as amenable to definite laws and mathematical treatment, of the building of the "Brain" for solving the final equation of twenty variables. Uneasy fears, utter disbelief, gave way to at least respectful attention as Kalmikoff rose to heights of eloquence.

Most of the captive leaders had heard of the great Russian scientist before, knew of his international fame, of his mysterious disappearance. His discourse was logical, exact, too; there was nothing of madness in his close-knit reasoning.

When he had finished, they looked at each other doubtfully, these party leaders, each with his own private panacea for the world. There was silence; definite hesitation.

It was the Socialist, Bob Heywood, who broke the ice. Something in the burly Russian's discourse had fired his imagination. He stepped forward.

"I am with you," he stated, "in spite of your high-handed method of insuring my presence. I am willing to submit to your experiment. Convince me by the result, of the truth of your calculations, and you may rely upon me, and upon my organization, for unqualified support."

Surprisingly Devoe, elegantly fastidious representative of the Aristocrats, was the next to step forward. "Unusual, but interesting," he murmured, "you may count on me."

And Communist, Social Laborite, even Monarchist, pledged cooperation. That made a majority, with Corbin, of all the parties.

Gelb, the Extreme Communist, sneered openly: "Another capitalistic trick."

Beck, the Fascist, who had recovered from his fainting spell, muttered: "We cooperate with no one."

The Middle Class Party of course never pretended to intellectual curiosity or any change in the status quo. As for the Patriot, he disliked all foreigners, and especially Russians.

But Kalmikoff smiled and rubbed his hands. So far so good.

"Now, gentlemen," he said, "you shall see." He led them over to the banked buttons. They crowded around it eagerly, even the recalcitrants.

"Here are nineteen of my variables," he explained, pointing to the first row. "Underneath are fifteen similar rows, each button of which represents a definite variation of the first row button under which it is placed. For example, take the first column. It represents the variable *form of government.* This would be monarchy, this oligarchy, this republic, this democracy, and so on. Now tell me, Corbin, under what heading would you place the United States?"

"A republic, of course."

"But a republic presupposes a duly elected set of representatives, a Chief Magistrate, an orderly process of law. Have we that now?"

"N-no."

"As a matter of fact we have no definite form. This country is really in a state of anarchical civil war, isn't it?"

● There were nods to that. Whereupon Kalmikoff pressed the ninth button in the first column. Then he went through the others; racial origins, total food crops of the preceding year, as laboriously compiled by Brusson; total manufactures, transportation facilities, birth and death rates, levels of education, and so on down the line until nineteen of the twenty variables were accounted for, just as the Technocrats had plotted their charts twenty years before.

On some there was general agreement, on others violent disputes. But the Russian produced such overwhelming statistics that most of his captives were convinced that his analysis of the variable was the correct one. By now the attention of everyone was captured; even the pompous Middle Class leader betrayed evidences of dim notions penetrating his self-satisfaction.

"And now," said Kalmikoff finally, "we come to the last variable, the composite of our nation's leadership; meaning yourselves. You are to enter that cabinet, one by one, and all your reactions will be automatically analyzed. When all of you have passed through, the machine will integrate the result and enter it as a single composite factor. Who will be the first?"

That threw a damper on the proceedings. Old fears of a catch somewhere were betrayed on every face.

"I shall," said Corbin, stepping forward without hesitation.

He entered the cabinet and Kalmikoff threw a switch. There was a muffled humming sound, certain wheels revolved, a single stylus moved in smooth motion. Then something clicked, and the machinery idled to a stop. Corbin stepped out, puzzled.

"Are you sure it worked?" he inquired. "All I felt was a tingling sensation, and heard a humming sound. Then it was over."

"Every one of your characteristics has been recorded," Kalmikoff assured him with a slight smile. "Even your

subconscious is there for all to see."

Beck, now entirely confident again, sneered derisively. "It's a gigantic hoax. The man's a charlatan."

The Russian fixed him coldly.

"Shall I prove to you that my machine will reveal your innermost emotions, your hidden memories, even?"

"Yes," he answered defiantly.

"Very well. I shall make it possible for you, as well as the rest of us, to listen in on the record. You will be more than satisfied, I am afraid. Do you still wish to make the test?"

The Fascist hesitated, but his pride forbade him to draw back. "I have no secrets from the world," he boasted, "and furthermore, your machine will fail miserably."

Kalmikoff escorted him to the cabinet without comment. When Beck was inside, he pressed a button. Immediately the booth hazed into transparency, revealing the startled Fascist within.

"We can see and hear everything now," said the scientist, and threw the switch. A pale light enveloped Beck, the humming rose to a whine. The Fascist's face was strained.

Then suddenly there was a click, and a queer mechanical voice filled the room. It had no human quality, no warmth of timbre, it spoke in disconnected words and phrases, between which there were perceptible pauses, and a new click to inaugurate the next word or phrase. For all the world like a set of old phonograph records, automatically played one after the other, Corbin thought.

"Leader. . ." the voice intoned. "Party follows. . . power. . .alone. . .rule. . .terror and destruction. . .coward. . .afraid of assassins. . .break promises. . .regret nothing. . .except. . .girl. . .twenty years ago. . .she. . . died. . ."

Everyone was straining forward to take in the unsavory disclosures. Beck had grown deathly pale, they could see the beads of perspiration dot a clammy brow. At the mention of the girl, however, he literally threw himself against the transparent wall with beating fists.

"Stop it, stop it," he shouted, eyes staring like a madman's. "For the love of God, stop! I believe; I'll do anything. . ." His voice rose to a scream.

Kalmikoff moved swiftly to the side of the cabinet, pressed the button. The walls clouded to opacity; the unhuman voice ceased abruptly, but the humming continued, the stylus moved and moved.

The Russian faced a deathly quiet assemblage. "We shall not penetrate further into his secrets, gentlemen," he said in a somewhat shaken voice, "but the record for the variable factor will continue."

CHAPTER IV

The Reading of the Future

● Strained seconds of frozen attention, and the humming ceased. The door opened, and the Fascist staggered out, haggard and drawn, his body trembling so he could hardly stand. He sank into a chair, and buried his face in his hands.

There was a profound silence. Then Corbin stated very quietly, matter-of-factly.

"They were phonograph records."

"Exactly," the scientist agreed, and went on to explain. "I made up a series of several thousand of them; each containing a word, a phrase, a sentence, which I thought most fitting for descriptions of people, of events, past, present or future. The solution of the equation causes certain levers to lift, these in turn set the records in motion. They are underneath the base of the 'Brain' machine; you see the loud speaker over there. Mr. Devoe is next."

Stricken with awe, each entered in turn the marvelous booth, hastily refusing the proffer of open publicity.

"How about Hiller?" said Kalmikoff finally. "The record will be incomplete without his reactions."

"How about Hiller?" echoed a voice.

Everyone whirled. Wingdale uttered an oath, went for his pistol. The Russian's assistants made movements toward their tunics.

"The first one to move dies!" There was no mistaking the menace of those tones.

An undersized man stood in the framed doorway, dressed in elaborate green uniform. The most amazing thing about him was his huge fleshly nose, which was surmounted by a grotesque wart that drew it out to even more amazing proportions. Behind that protuberance the rest of the face seemed curiously insignificant, with its sallow cheeks, toothbrush mustache and weak chin covered by a scraggly beard. Behind and around him swarmed soldiers in green, with very efficient hand spray-guns levelled at the startled assemblage.

"Hiller!" The name jerked from some one in the room.

"Yes, Hiller." The little man was beside himself with rage. He came forward, sputtering. "Who was responsible for that devil's trick? Pretending to kidnap every leader, and making it look as if I were responsible. The whole country's on my trail." There was a trace of accent to him, something guttural that went oddly with his leadership of the Nationalist Party.

"But we *were* kidnaped, Adolph," Beck protested. They had worked hand in hand when the occasion suited.

Hiller turned on him snarling. "Yah! So I notice. Kidnaped, you dirty double-crosser. You all got together to eliminate me! It was a plant, that's what it was. Getting afraid of me, weren't you? But I'll fix you all. The tables are turned now; you'll dance to *my* bidding."

"But, Adolph, I tell you it's the truth, God's truth!" Beck was almost in tears. He pointed a quivering finger at Corbin, who stood proudly apart. "It's Corbin's doing. He's the kidnapper. We're all here against our wills."

The little man swerved on the leader of the Reconstructionists. His mustache bristled.

"Corbin," he repeated the name meditatively. "That *does* make sense. You got a note from Kalmikoff—you're Kalmikoff, ain't you," he stabbed a thin finger at the Russian, who nodded calmly. He continued. "I sent my men to get here ahead of you; I figured that something important was up. The stupid ass of a lieutenant let himself be beaten. When this thing broke, I had to run for my life. Every party combined against me. I figured this place as somehow in the picture; I was angry anyway for the licking my men got. Corbin, you—you're responsible, aren't you?"

"Yes, I am," Hugh said very distinctly. He scorned to avail himself of technical excuses.

"There, you see," Beck cried. "Now will you free me, Adolph?"

"And me, too," spoke up Wellman and Henderson simultaneously.

Hiller looked them all over and smiled a twisted smile. "No, I don't think so. I'd be a fool not to take advantage of what's thrown at me, so to speak. We'll talk business

later. Morris!"

A smartly clad lieutenant stepped forward, saluted.

"Tie up these men so they can't get away. Search them first."

The officer snapped commands. A squad of soldiers moved into the room.

Peter Rashdell had imperceptibly edged himself to the farther end of the "Brain" machine. Something had snapped within him at the appearance of Hiller. That was *his* fault, he reproached himself over and over. If he had not been a young, hotheaded fool, Hiller would have been a captive too, and the great experiment would have continued.

He moved his head cautiously. Half hidden by the bulk of the machine was a door. Where it led to, he did not know, but he was utterly reckless now. He had been responsible, and it was up to him to do something.

As the soldiers advanced, he swung sharply around, and dived headlong for the door.

"What's that? Stop him; shoot him!" Hiller was shouting.

Guns crashed, but Rashdell had disappeared. The sound of a banging door, racing of pounding feet, a final crash, and it was over. Soldiers swarmed after him, ran around the building. There was no trace of the fugitive. That door had led through a storage compartment out into the close-crowding trees of the hill-side.

● Hiller fumed as failure was reported to him.

"You damned idiots," he stormed, "letting him get away like that. He'll have the country roused in no time."

Wingdale smiled thinly. Hiller turned on him furiously. "You smile? It won't help *you*. I'll move you all to another place where they can search for months and never find you. Morris, prepare marching orders."

"Very well, sir." The soldier looked curiously at the great machine. "What shall we do with this, sir?"

"Destroy it. Burn the buildings. No wait! You, Kalmikoff, what is this infernal affair? The truth now, if you value your life."

The Russian explained as he had explained to the others. There was no trace of fear in his bold blue eyes.

"Hmmm!" Hiller muttered when he was through. "What craziness!" He eyed the machine again. "You say it's all set to foretell the future of the United States except for me?"

"Yes, under present existing conditions."

"But I've changed them already."

"Then the future will change as far as the factor of leadership can change it."

"That means everything," said the little man pompously. "Leadership, that's what counts—*my* leadership."

The lieutenant appeared in the doorway.

"Everything is in readines, sir."

But Hiller paid no attention to him. He kept on staring at the "Brain" machine in fascination. "Listen, you—" he said suddenly to Kalmikoff, "I, Hiller, am going to give you your last factor. I want to see what would have happened. Untie him, Morris."

The Russian stretched his cramped limbs.

"I'm going into your thingumajig," the Nationalist leader continued, "and you work the machine. But if you try any tricks, you'll be shot. Hear that?"

"I am a scientist, not a trickster," Kalmikoff said with dignity.

"Watch him anyway, Morris," Hiller retorted and walked into the booth. When he came out, he looked disappointed. "Pure hocus pocus. Now what?"

Kalmikoff reached over and knifed down a huge switch. The entire machine sprang to life. Gears meshed smoothly on gears, the rollers moved back and forth in bewildering routine, every stylus raced ovet its sheet of paper, wheels turned at dizzying speeds.

Everyone was watching now. The bound captives forgot their bonds, the soldiers their watchful guard. Time stood still as thousands of parts moved in complicated dance. Then suddenly, the great machine clicked off, and all was quiet in the room again.

Hiller relaxed his strained attention, looked questioningly at the inventor.

"There are two courses open now," the scientist explained. "The symbols of the completed equation are printed on a strip of paper underneath the last stylus. I can substitute the proper expressions and read you the answer, or if you prefer, my automatic reproducer will transform them into speech for all to hear."

"That would be better."

Kalmikoff went to the farther side of the machine and pressed two concealed buttons. There was a whirring of parts for a while, then the strange, unhuman voice came to them. It was issuing from the loudspeaker.

"Eleven parties. . .click. . .merge. . .three years. . .two parties . . .Communist. . .Fascist. . .civil war. . .five years . . .million die. . .fighting. . .click. . .more. . .starvation, plagues. . .no industry. . .farming. . .civilization perish. . . America perish. . .invasions. . .new colonies. . .foreign. . . click. . .whrr. . . . ."

The unhuman Cassandra ceased. The bound party leaders stared at each other with bloodshot, fear-haunted eyes. A shudder ran through the room. Was this to be the future of their country?

Only Hiller chuckled, as if pleased.

"There, you see," he cried to his rivals. "That's what would have happened if I hadn't been smart enough to outwit you. Now tell me, Kalmikoff, what will actually happen?"

"You have just heard it," the Russian boomed at him.

"Numbskull!" shrilled Hiller in his irritation. "It's been changed. *I* am the only leader left."

"If you wish to know what would take place *if* you become the sole leader of America," the scientist said carefully, "I shall reset the machine."

"*If! If!*" the little man was dancing with rage. "Of course it is so. You shall suffer for your insolence."

But Kalmikoff's face was a blank as he reset all the factors as before, leaving the factor of leadership open.

"Now, Mr. Hiller, if you will enter the booth again. . ."

The Nationalist forgot his anger in his pompousness. He swelled like a pouter pigeon, and went in. The same routine ensued; the great machine moved like a live thing through its rhythms.

When it finally came to rest, the big Russian stroked his beard, and looked out of half closed eyes at the man who aspired to omnipotent leadership.

● "Do you still wish to hear what is in store, or shall I destroy the record without reading it?"

Almost the same words he had employed to Beck, not so long before. Ominous words!

"Yah!" Hiller fairly spat at him. "You wish to cheat

me of my victory. You are afraid the world will hear of the glory that awaits it under my leadership. Put it on, I say."

"I obey your command." Strange how inscrutable his face was!

The mechanical voice scratched a moment. It seemed to the breathless listeners as if it hesitated to begin. Then words came, distinct, icy, eerie in tone.

Hiller settled himself in a chair to hear the better, teetering on two legs, arms crossed over paunchy belly in Napoleonic attitude, a fatuous smile behind his enormous nose.

"Hiller. . ." said the mechanical voice jerkily, "delusions of grandeur. . .not sure. . .kill all rivals. . .in his power. . ." Beck moaned and toppled over like a trussed pigeon. He had fainted, but no one heeded him in the tensity of the ensuing drama.

"Great indignation. . .," the voice ground on, "no leaders. . .click. . .Hiller. . .dictator. . .six months. . .reign of terror. . .revolts. . .click. . .Hiller. . .killed. . .3 years. . . bloodshed. . .extreme Communists. . .seize power. . ."

"Shut that damn thing off!"

Hiller had awakened from the paralysis that had gripped him as the machine intoned its remorseless forecast, was on his feet screaming his mingled rage and panic. Even the wart on his nose had drained white.

Kalmikoff moved with utmost deliberation in turning off the machine.

"I warned you that the future might not prove pleasant. It is best sometimes not to know."

"It's a fake, a sham! You have a man hidden somewhere putting on the records; you're trying to scare me."

The scientist surveyed the trembling little man who aspired to dictatorship with calm disdain.

"You are at liberty to search. The machine tells the truth."

"I'll smash it; kill you for a croaking liar."

"The 'Brain' has foretold that you will kill us all."

That staggered the Nationalist. In spite of his bluster he believed at least enough to make him terribly afraid. If he proceeded to carry out his threat, the rest would inevitably follow, and the machine had prophesied his death.

Henderson came out of his torpor. Beck was still unconscious.

"It is to your advantage to free us," the Middle Class leader said shakily.

Michael Gelb's glittering eyes blazed with the fires of martyrdom. He strained at his bonds and shouted: "Kill us, kill us all, Adolph Hiller! It is destiny; you cannot halt the march of truth. Did you hear, all of you? Extreme Communism will be triumphant. It will smash your capitalistic system and you with it. I shall not die in vain. Kill me—now!"

Beck came out of his coma to moan: "Spare me; I'll do anything, only don't make me die!" and relapsed into unconsciousness again.

The place was a bedlam by now. Dignity, calm, pride, all the trappings that had once enveloped the inner natures of these powerful men, went by the board. Some shrieked for mercy; others, notably Heywood, the Socialist, shouted defiance, and above all others came the insane iteration of Gelb: "Kill everyone of us! Kill!"

Hiller seemed about to have a seizure; his face was clammy, he shook his fist at the lifeless machine and its inventor indiscriminately. His soldiers were as confused as he; their guns were leveled, fingers trembled on the triggers. It took but a word, a spark, to precipitate a massacre.

There were some notable isles of calm. The Russian leaned against his beloved "Brain" machine, staring disdainfully. Corbin lay silent, his face a proud mask. The three assistants seemed to have no life in them; only their eyes moved. And old Wingdale, veteran of many wars, lay relaxed to all outward seeming, but he was working steadily at the ropes that bound his hands. One knot had already been loosened.

Passion finally overcame discretion. Hiller yelled in a strangled voice: "Line them up and shoot them."

His lieutenant, Morris, barked orders in the madhouse. Discipline reasserted itself. The soldiers jerked the captives roughly to their feet; strapped the Russian's hands again, thrust him into line. Beck moaned, opened his eyes, swayed, and fell in a heap.

A deathly silence descended suddenly, even Gelb ceased his chanting, a bitter smile playing around his pinched lips.

The little man had recovered his poise. He walked rapidly up and down the line of his victims, sneering.

"I don't get frightened so easily, do I? You rigged up a plant, but it didn't work. Hiller is too brave and smart a man to be fooled. And you, say your prayers; you're going to die."

Michael Gelb filled his mouth and deliberately spat full into the little man's face. An almost animal scream tore out of the Nationalist's throat. He sprang back, great nose working ludicrously.

"Shoot the dogs! Fire!"

● Rifles leaped to shoulders, steadied. Wingdale, at the end of the line, made a last desperate effort to loosen the remaining knot.

"Fire!" Morris's command resounded like the crack of doom.

Fingers pressed heavily against triggers.

Thank God, the knot had slipped! Wingdale sprang sideways toward the door through which Rashdell had catapulted earlier in the day.

A single shot, a shout of warning, then the crash of many guns. The sudden interruption unnerved the firing squad, caused certain unexpected muscular reactions. The volley rang out, but raggedly, guns jerked from steady aim. The room was filled with smoke and shouting. Some one screamed horribly.

Outside, the noise of a battle grew. Great guns rocked the building with their concussion; dynol bullets exploded with peculiar whistling noise, and spray-pellets added their deadly ping-ping.

Morris, professional soldier, gave calm, rapid orders. The soldiers reformed ranks, poured after him out of the building to aid their beleaguered brethren outside. Hiller gave a last furious glance around, raised his pistol to shoot someone he saw moving in the smoky dimness, lowered it again, and dashed out after his troops. Very ecstacy of fear made him brave.

Corbin crawled against Brusson. "Untie me," he said urgently.

Back to back the two men lay, while the Frenchman worked at his bonds. Finally Corbin staggered to his feet, and unloosed the rest of those still alive as fast as numbed fingers could work.

Hasty glances to see the casualties. Michael Gelb lay sprawled. He had achieved the martyrdom he coveted. Wellman, the Patriot, was dead, his brains oozing slowly. And Beck too, ironically enough. Unconsciousness had slipped into the deeper sleep. A few of the others were wounded. Wingdale was nowhere to be seen.

Corbin took instant command. "Can you get your guns working, Kalmikoff?" His eyes glowed with a strange new light; the pacifist had become a warrior.

"I think so."

Down through a trapdoor the survivors plunged. It led into a concrete-faced cellar. The butt ends of guns imbedded in the cement loomed wickedly. The men worked furiously, breaking out ammunition, loading the guns. Gone were party lines, antagonisms, only a common burning thirst for revenge.

● General Wingdale landed sprawling in a thicket on the hillside. He picked himself up and burrowed deeper. Then he looked around. There was no pursuit.

The hills gave tongue to the roar of a full-sized battle. Shells furrowed into the loam unpleasantly close to him, exploded in great geysers of earth. Trees leaned suddenly over, went crashing with majestic slowness. Bullets whistled all about him.

The old general paused awhile to recover his breath—he was not as physically fit as he once was—then crept slowly down the hill through the woods, crouching low to avoid the deadly storm. He reached a point where a notch in the trees gave him an unobstructed view of the valley and clearing below.

Hiller's men had deployed in front of the building, lying flat on their stomachs to take advantage of certain small irregularities of ground. They were firing and reloading with furious speed. There were about two hundred of them.

The attacking force was hidden in the trees abutting the trail. Flames spurted out in thin streaks, punctuated by a regular *boom—boom*. That was a field piece, the general reflected.

Then, even as he watched, the hidden forces decided to attack. A great cheer burst through the medley of sounds, and a wave of men swarmed out of the woods, firing as they ran. Another wave, and a third, then there were no more.

With a great bound of his heart, Wingdale recognized the familiar khaki of his forces, but there were other shades intermingled too. Horizon blue of the Monarchists, dark red of the Socialists; half a dozen other colors. Damn it, if only he had a gun. He'd give ten years of his life to be down there, leading the assault.

Then he cursed, deeply, amazedly. A slight figure had sprung to the fore of the first wave, brandishing a pistol, shouting orders as he ran. Wingdale recognized young Rashdell at once. It was magnificent, but it was suicide. The hail of bullets that was decimating the attacking men, seemed to concentrate on the reckless leader. Peter staggered and fell. Then the waves of attack went over him.

Red fury engulfed the general. He sprang to his feet, shouting terrible phrases, and ran down the hill headlong, heedless of the fact that he was unarmed and exposed to the crossfire of both factions.

The allied forces, or what was left of them from the pitiless raking slaughter, had washed up to the defenders. A terrific hand-to-hand fight was in progress. Pistols went off point-blank, clubbed weapons rose and fell, men smashed bare fists into each other's faces. Wingdale precipitated himself into the thick of the melee, snatched a gun from the lifeless fingers of a soldier, and took command.

Slowly but surely the attackers were being overwhelmed; superiority of numbers lay with the defending force; when guns roared from almost directly underneath them. Kalmikoff's weapons had finally found tongue.

● Caught between two fires, unknowing where the new enemy had appeared from, the Nationalists' resistance collapsed into demoralized flight. They threw down their weapons and ran. For a quarter hour the woods echoed with the noise of pursuit, the cutting down of some unfortunate wretch. But Wingdale remained on the battlefield, searching among the heaps of the dead and dying.

At last he found what he was looking for. Underneath sprawled, unmoving figures, lay another. It was Rashdell, pale and bloody of face, but breathing. The old general lifted him out gently, staggered under the load toward the building. Hawkes, eyes somber, met him half way, took the limp body off his shoulders, brought it into the chamber of the "Brain" machine.

The survivors clustered around them excitedly. A barrage of questions swept over the general.

"Easy!" he warned. "Young Rashdell's the only one to know the answers, and he's almost out. Some water, quickly."

Marinelli brought a bucketful. Under its cold ministrations Peter revived, sputtering and gasping.

"Easy there, lad," soothed Wingdale, examining his wounds with practiced fingers. One bullet had fractured a collarbone, another had ploughed through the scalp, but there was nothing inherently dangerous.

"Now, Peter, tell us about it," said Corbin, after his wounds and those of the others had been dressed. The pursuit was over, the allied partisans bivouacked in the glade.

"Nothing much to tell, sir," said Peter. "I dived through that door out on the hillside, picked myself up and started running for dear life. I kept to the woods, not daring to try and find the trail. After a while I heard no more sounds of search, but I kept on, circling to get back to the main road. I hit it about half a mile below this place.

"While I stood there, hesitating, not knowing what to do, a fleet of armored cars came tearing around a bend. Judge how I jumped when I saw the insignia of the Reconstructionists on the leading automobile. I ran out into the middle of the road, and waved madly. The procession stopped at once, and soldiers hopped out. I recognized Manning and explained rapidly." Peter hesitated and smiled boyishly. "At least I told them part of the truth—that Hiller had you all in his power."

"Good lad," Wingdale approved. "Go on."

"I found out that this was but one of hundreds of contingents that were scouring the country in search of the kidnapped leaders. Party lines had broken down; Hiller had absorbed all the hatred; and the Nationalists were everywhere fleeing for their lives. That is all, sir, the rest you know."

"Who made you commander of the troop?" Wingdale demanded abruptly.

"Why, sir," the boy blushed and stammered. "Manning

was in command, but back in the woods, he was shot, and I—I didn't think of it much, but just yelled for them to come on."

Corbin stared at his secretary. "So you ordered the attack, eh?"

Rashdell stammered something, but old Wingdale was already talking, mopping his bald head as he always did when he was most serious. He addressed them all generally.

"You've all heard what young Rashdell said about the kidnaping; how the outside world, your own parties, feel about it?"

A murmur of assent.

The general fixed them with glaring eyes. "That story stands, doesn't it?"

The surviving leaders looked at each other, turned simultaneously, and chorused: "It stands!"

Wingdale chuckled and relaxed. He positively beamed on them now.

"That's fine. Now listen carefully to me. The extremist leaders are all dead, their parties will die with them —Gelb, Beck, Wellman, and outside I saw Hiller. His dictatorship days are over. That leaves only the moderate and moderately radical parties. You've been through something together; you've heard things that should have changed all your views. Why not cooperate instead of fighting each other? Surely the country, civilization, humanity itself is worth it. God knows we don't want another twenty years of hell such as we've been through. We can pull out, but only if everyone puts their shoulders to the task. What do you say?"

Big Bob Heywood sprang forward, his eyes shining.

"I'm the first to say 'yes,'" he cried. "And I'll go further. Right here and now I cast my vote for Corbin Reconstruction Plan. I prefer my own; but his has the best chance of getting all your sanctions; and it will work, I am sure of that."

Impelled by that strange thing known as crowd psychology, the other leaders caught the contagion and rose to their feet, shouting: "Corbin's plan, Corbin's plan!"

The sentinel guarding the door took alarm at the tumult, stuck his head through the doorway, and as hastily withdrew it.

"There, you see," Wingdale grinned at Kalmikoff, who was listening with intent interest, "your know-all 'Brain' machine couldn't foretell this."

The Russian scientist smiled calmly. "I never claimed it was a fortune-telling machine. It shows the result of the present state of facts in accordance with rigid mathematical laws. The state of facts has changed, that is all."

Corbin said eagerly: "Suppose we set it for the situation as it now stands."

"It would be wise," Kalmikoff nodded, "before any commitments are made."

Once more the factors were set, with certain changes necessitated by the deaths of four leaders and the dissolution of their followings. Then Corbin entered the booth, *alone* this time.

Again silence ruled, while the inexorable machine went through its intricate calculations.

Then the loudspeaker broke into its unhuman tones, while everyone leaned forward, straining to hear every syllable. The destiny of the United States, and ultimately of the world, was in the balance.

"Corbin. . .sole. . .leader. . .click. . ." the machine spoke. "Parties. . .harmony. . .Advisory Council. . .Reconstruction Plan. . .slow. . .click. . .years. . .work. . .rebuilding civilization. . .machinery. . .setbacks. . .Europe. . .invasions. . .defeated. . .Plan proceeds. . .efficient production . . .efficient distribution. . .ten years. . .success. . .

"Mankind happy. . .plenty food. . .machines. . .servants . . .free people. . .glorious civilization. . .click. . ."

THE END

What is in Space?

● "NATURE abhors a vacuum" said the old philosophers. In the light of modern science, it would seem as though Nature abhorred anything else—from the scarcity of matter in the universe. The suns, and the great clouds of gas or dust we call nebulas, are the exception in a void whose distances are measured in light-millennia. Some of the facts concerning this immense waste of almost undiluted nothing which we call the Universe will be discussed together with other problems of time, space and radiation in the March issue of

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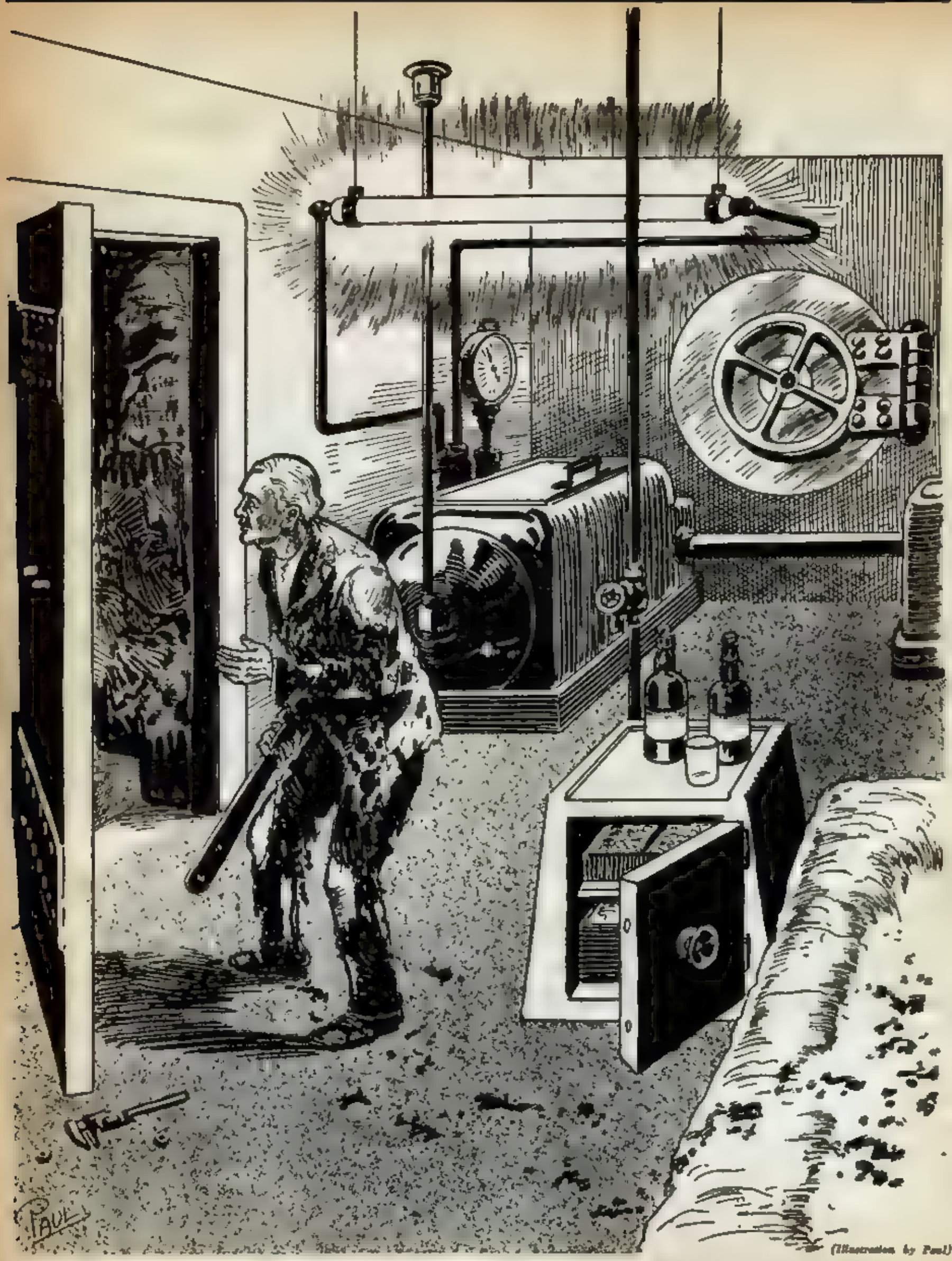

(Illustration by Paul)

The door gave inward an inch. Protestingly it swung open and Winters looked out upon ancient stone steps, half-lit by the room's illumination.

THE MAN WHO AWOKE

By LAURENCE MANNING

● There are many ways to explore the future, writers think. But Mr. Manning believes that there is one sure way, the way taken by the unforgettable character in Wells' "When the Sleeper Wakes." This much we tell you about Mr. Manning's clever and fast-moving story.

Mr. Manning has rather unusual ideas as to the future of the race. He has worked them out carefully and brilliantly, and so sees a type of civilization that no one has yet predicted.

All of the thrill, the tremendous joy that one could have in awakening in a strange world far in the future is contained in this story. It gives one a feeling, the editors believe, that the future is much more fascinating than the present. At least Mr. Manning's story makes it appear so.

● IT was in all the newspapers for the entire month of September. Reports came in from such out-of-the-way places as Venezuela and Monte Carlo: "MISSING BANKER FOUND." But such reports always proved false. The disappearance of Norman Winters was at last given up as one of those mysteries that can only be solved by the great detectives Time and Chance. His description was broadcast from one end of the civilized world to the other: Five feet eleven inches tall; brown hair; grayish dark eyes; aquiline nose; fair complexion; age forty-six; hobbies: history and biology; distinguishing marks: a small mole set at the corner of the right nostril.

His son could spare little time for search, for just a month before his disappearance Winters had practically retired from active affairs and left their direction to his son's capable hands. There was no clue as to motive, for he had absolutely no enemies and possessed a great deal of money with which to indulge his dilettante scientific hobbies.

By October only the highly paid detective bureau that his son employed gave the vanished man any further thought. Snow came early that year in the Westchester suburb where the Winters estate lay and it covered the ground with a blanket of white. In the hills across the Hudson the bears had hibernated and lay sleeping under their earthen and icy blanket.

In the pond on the estate the frogs had vanished from sight and lay hidden in the mud at the bottom—a very miracle in suspended animation for biologists to puzzle over. The world went on about its winter business and gave up the vanished banker for lost. The frogs might have given them a clue—or the bears.

But even stranger than these was the real hiding place of Norman Winters. Fifty feet beneath the frozen earth he lay in a hollow chamber a dozen feet across. He was curled up on soft eiderdown piled five feet deep and his eyes were shut in the darkness of absolute night and in utter quiet. During October his heart beat slowly and gently and his breast, had there been light to see by, might have been observed to rise and fall very slightly. By November these signs of life no longer existed in the motionless figure.

The weeks sped by and the snow melted. The bears came hungrily out of winter quarters and set about restoring their wasted tissues. The frogs made the first warm nights of spring melodious to nature-lovers and hideous to light sleepers.

But Norman Winters did not rise from his sleep with these vernal harbingers. Still—deathly still—lay his body and the features were waxy white. There was no decay and the flesh was clean and fresh. No frost penetrated to this great depth; but the chamber was much warmer than this mere statement would indicate. Definite warmth came from a closed box in one corner and had come from it all the winter. From the top of the chamber wall a heavy leaden pipe came through the wall from the living rock beyond and led down to this closed box. Another similar pipe led out from it and down through the floor. Above the box was a dial like a clock-face in appearance. Figures on it read in thousands from one to one hundred and a hand pointed to slightly below the two thousand mark.

Two platinum wires ran from the box over to the still figure on its piled couch and ended in golden bands—one around one wrist and one circling the opposite ankle. By his side stood a cabinet of carved stone—shut and mysterious as anything in that chamber. But no light was here to see by, only darkness; the black of eternal night; the groping stifling darkness of the tomb. Here was no cheering life-giving radiation of any kind. The unchanging leaden metal sealed in the air from which the dust had settled completely, as it never does on the surface of our world, and had left it as pure and motionless as crystal—and as lifeless. For without change and motion there can be no life. A faint odor remained in the atmosphere of some disinfectant, as though not even bacteria had been permitted to exist in this place of death.

● At the end of a month Vincent Winters (the son of the missing man) made a thorough examination of all the facts and possible clues that the detectives had brought to light bearing upon his father's disappearance. They amounted to very little. On a Friday, September 8th, his father had spent the day on his estate; he had dinner alone, read awhile in the library, had written a letter or two and retired to his bedroom early. The next morning he had failed to put in an appearance for breakfast and

Dibbs the butler, after investigating, reported that his bed had not been slept in. The servants had, of course, all been minutely questioned even though their characters were such as almost to preclude suspicion. One only—and he the oldest and most loyal of them all—had acted and spoken in answer to questions in a fashion that aroused the curiosity of Vincent Winters. This man was Carstairs, the gardener—a tall ungainly Englishman with a long sad-looking face. He had been for twelve years in the employ of Mr. Winters.

On Friday night, about midnight, he had been seen entering his cottage with two shovels over his shoulder—itself, perhaps, not an incriminating circumstance, but his explanation lacked credibility: he had, he said, been digging in the garden.

"But why *two* shovels, Carstairs?" asked Vincent for the hundredth time and received the same unvarying answer: "I'd mislaid one shovel earlier in the day and went and got another. Then I found the first as I started home."

Vincent rose to his feet restlessly.

"Come," he said, "show me the place you were digging."

And Carstairs paled slightly and shook his head.

"What, man! You refuse?"

"I'm sorry, Mr. Vincent. Yes, I must refuse to show you . . . *that*."

There were a few moments of silence in the room. Vincent sighed.

"Well, Carstairs, you leave me no choice. You are almost an institution on this place; my boyhood memories of the estate are full of pictures of you. But I shall have to turn you over to the police just the same," and he stared with hardening eyes at the old servitor.

The man started visibly and opened his mouth as if to speak, but closed it again with true British obstinacy. Not until Vincent had turned and picked up the telephone did he speak.

"Stop, Mr. Vincent."

Vincent turned in his chair to look at him, the receiver in his hand.

"I cannot show you the place I was digging, for Mr. Winters ordered me not to show it to anyone."

"You surely don't expect me to believe that!"

"You will still insist?"

"Most assuredly!"

"Then I have no choice. In case it were absolutely necessary to do so, I was to tell you these words. 'Steubenaur on Metabolism.'"

"What on earth does that mean?"

"I was not informed, sir."

"You mean my father told you to say that if you were suspected of his . . . er . . . of being connected with his disappearance?"

The gardener nodded without speaking.

● "H'm . . . sounds like the name of a book . . ." and Vincent went into the library and consulted the neatly arranged card catalog. There was the book, right enough, an old brown leather volume in the biological section. As Vincent opened it wonderingly an envelope fell out and onto the floor. He pounced upon this and found it addressed to himself in his father's handwriting. With trembling anxious fingers he opened and read:

● "My dear son:

It would be better, perhaps, if you were never to read this. But it is a necessary precaution. Carstairs *may* in some unforseen way be connected with my disappearance. I anticipate this possibility because it is true. He has in very fact helped me disappear and at my own orders. He obeyed these orders with tears and expostulation and was to the very end just what he has always been—a good and devoted servant. Please see that he is never in want.

"The discovery and investigation of the so-called 'cosmic' rays was of the greatest interest to us biologists, my son. Life is a chemical reaction consisting fundamentally in the constant, tireless breaking up of organic molecules and their continual replacement by fresh structures formed from the substance of the food we eat. Lifeless matter is comparatively changeless. A diamond crystal, for instance, is composed of molecules which do not break up readily. There is no change—no life—going on in it. Organic molecules and cells are termed 'unstable,' but why they should be so was neither properly understood nor explained until cosmic rays were discovered. Then we suspected the truth: The bombardment of living tissue by these minute high-speed particles caused that constant changing of detail which we term 'life.'

"Can you guess now the nature of my experiment? For three years I worked on my idea. Herkimer of Johns Hopkins helped me with the drug I shall use and Mortimer of Harvard worked out my ray-screen requirements. But neither one knew what my purpose might be in the investigations. Radiation cannot penetrate six feet of lead buried far beneath the ground. During the past year I have constructed, with Carstairs' help, just such a shielded chamber on my estate. Tonight I shall descend into it and Carstairs shall fill in the earth over the tunnel entrance and plant sod over the earth so that it can never be found.

"Down in my lead-walled room I shall drink my special drug and fall into a coma which would on the surface of the earth last (at most) a few hours. But down there, shielded from all change, I shall never wake until I am again subjected to radiation. A powerful X-ray bulb is connected and set in the wall and upon the elapse of my alotted time this will light, operated by the power generated from a subterranean stream I have piped through my chamber.

"The X-ray radiation will, I hope, awaken me from my long sleep and I shall arise and climb up through the tunnel to the world above. And I shall see with these two eyes the glory of the world that is to be when Mankind has risen on the stepping stones of science to its great destiny.

"Do not try to find me! You will marry and forget me in your new interests. As you know, I have turned over to you my entire wealth. You wondered why at the time. Now you know. By all means marry. Have healthy children. I shall see your descendants in the future, I hope, although I travel very far in time: One hundred and twenty generations will have lived and died when I awaken and the Winters blood will have had time to spread throughout the entire world.

Oh my son, I can hardly wait! It is nine o'clock now and I must get started upon my adventure! The call is stronger than the ties of blood. When I awaken you will have been dead three thousand years, Vincent. I shall never see you again. Farewell, my son! Farewell!

And so the disappearance of Norman Winters passed into minor history. The detective agency made its final report and received its last check with regret. Vincent Winters married the next year and took up his residence upon his father's estate. Carstairs aged rapidly and was provided with strong young assistants to carry on the work of the place. He approached Vincent one day, years later, and made the request that he might be buried on the estate at the foot of the mound covered with hemlock and rhododendrons. Vincent laughed at the suggestion and assured him that he would live many a year yet, but the old gardener was dead within a year and Vincent had the tomb dug rather deeper than is usual, peering often over the shoulder of the laborer into the depth of the grave. But he saw nothing there except earth and stones. He erected a heavy flat slab of reinforced concrete on the spot

"Most peculiar, if you ask me," said old Dibbs to the housekeeper. "It's almost as if Mr. Vincent wanted Carstairs' stone to last a thousand years. Why, they cut the letters six inches deep in it!"

In due time Vincent Winters himself died and was buried beside the gardener at his earnest request. There remained no one on the earth who remembered Norman Winters.

CHAPTER II

Awakening—in What Year?

● It was night and great blue sheets of flame lit the sky with a ghastly glare. Suddenly a blinding flash enveloped him—he felt a million shooting pains in every limb—he was lying on the ground helpless and suffering—he fell into a brief unconsciousness.

A dozen times he awakened and each time he shrieked with the pain in his whole body and opened his eyes upon a small room lit by a penetrating blue electric bulb. Numberless times he tried to move his right hand to shield his eyes but found he could not force his muscles to obey his will. Days must have passed, as he lay there, with sweat dotting his brow with the effort, and finally one day his hand moved up slowly. He lay a full minute recovering. He did not know where he was. Then from the depths of infinity a little memory came into his dulled brain; a memory with a nameless joy in it. And slowly his surroundings struck new meaning and a vast thrill coursed through him. He was awake! Had he succeeded? Was he really alive in the distant future?

He lay quiet a moment letting the great fact of his awakening sink in. His eyes turned to the stone cabinet beside his couch. Slowly his hand reached out and pulled softly at the handle and a compartment on the level of his face revealed two bottles of yellowish liquor. With gasping effort he reached one and dragged it over to him, succeeding in spilling a little of its contents but also in getting a mouthful which he swallowed. Then he lay quietly a full half hour, eyes purposefully shut and lips tightly pressed together in the agony of awakened animation, while the medicine he had taken coursed through his veins like fire and set nerves a-tingling in arms and legs and (finally) in very fingertips and toes.

When he again opened his eyes he was weak but otherwise normal. The stone cabinet now yielded concentrated meat lozenges from a metal box and he partook very sparingly from the second bottle of liquid. Then he swung his legs down from the eiderdown couch, now tight-compressed from its original five feet to a bare two feet of depth by his age-long weight, and crossed the chamber to the clock.

"Five thousand!" he read breathlessly, clasping his thin hands together in delight. But could it be true? He must get outside! He reached down to a valve in the leaden piping and filled a glass tumbler with cold water which he drank greedily and refilled and drank again. He looked about curiously to note the changes time had produced on his chamber, but he had planned well and little or nothing had deteriorated.

The lead pipe was coated with a few tiny cracks in its surface and particles of white dust lay in them, where the cold water had gathered the moisture of the air by condensation. But this could not have been helped, for the stream of water through this pipe was all that kept the tiny generator turning—that made possible the heated chamber and the final blaze of the specially constructed X-ray lamp than now filled his whole being with its life-restoring radiations.

Winters removed the cover from the power box and examined the motor and generator with great care. The chromium metal parts and the jewelled bearings showed no slightest sign of wear. Did that mean that only a few years had elapsed? He doubted his clock's accuracy. He replaced the covering and brushed off his hands, for everything was coated with dusty sediment. Next, Winters examined the heat elements and placed a glass container of water upon them to heat. With more of his meat concentrate he made a hot soup and drank it thankfully.

Now he went eagerly to the door in the lead wall and pulled at the locking lever. It resisted and he pulled harder, finally exerting all the strength he had in the effort. It was useless. The door was immovable! He leaned against it a moment, panting, then stooped and scrutinized the door-jamb. With a chill of dread he observed that the leaden chamber-wall had become coated at the crack with a fine white dust. It had rusted the door into place! Had he awakened only to die here like a rat in a trap?

In his weakened condition he felt despair creep over his body and mind helplessly. He again sank back on his couch and stared desperately at the door. It was hours before the simple solution to his difficulties occurred to him. The locking lever—of course! It was of stainless steel and held to the door only by one bolt. A matter of a dozen turns loosened the nut on this bolt and the lever came away freely in his hands.

With this bar of stout metal as a crowbar he easily pried into the soft lead wall beside the door-jamb and, obtaining a fulcrum, put his frail weight on the end of the lever. The door gave inward an inch! In a few minutes his efforts were rewarded. The door groaned protestingly as it swung open and Winters looked up the ancient stone steps, half-lit by the room's illumination. But in the open doorway a chill draft blew on his ragged and time-tattered garments and he went back to the chamber and commenced unscrewing a circular cover set into the wall.

It came away heavily with a hiss of air, for it had enclosed a near-vacuum, and Winters pulled out clothes neatly folded. He was relieved to find a leather jacket still strong and perfect. It had been well oiled and was as supple as new. Some woolen things had not fared so well, but stout corduroy breeches of linen fibre seemed well preserved and he put these on. A tightly covered crock of glass filled with oil yielded up a pistol designed to shoot lead bullets under compressed air and a neat roll of simple tools: a small saw, a file, a knife and a hand-axe. These he thrust into the waist-band of his breeches, which had been slit around the belt to accommodate them.

Now with a last look around, Norman Winters started up the steps, guided only by the light from the chamber behind. He stumbled over fallen stones and drifted earth as he climbed and at the top came to a mat of tree-roots sealing him in. And now the axe was wielded delicately by those enfeebled arms and many minutes passed in severing one small piece at a time. The cap-stone which had originally covered the tunnel had been split and

pressed to one side by the force of the growing tree and after the third large root had been severed a small cascade of earth and pebbles let down on him a blazing flood of sunlight.

He paused and forced himself to return to his chamber; filled a glass bottle with water and slung it to his belt; put a handful of concentrated food in his pocket, and left the chamber for good, closing the door behind him and turning off the light.

It took a few minutes only to squeeze his head and shoulders through the opening between the roots and he looked about him with pounding heart.

But what was this? He was in the middle of a forest!

● Upon all sides stretched the trees—great sky-thrusting boles with here and there a clump of lesser growth, but set so evenly and spaced so regularly as to betray human oversight. The ground was softly deep in dead leaves and over them trailed a motley of vine-like plants. Winters recognized a cranberry vine and the bright wintergreen berries among many others he did not know. A pleasant sort of forest, he decided, and he set off rather hesitantly through the trees to see what he could find, his mind full of speculations as to how long it must have taken these trees to grow. To judge from the warmth it must be about noon of a midsummer's day but what year? Certainly many of the trees were over 100 years old!

He had not progressed more than a hundred yards before he came upon a clearing ahead and, passing beyond a fringe of shrubs he came into full view of a great highway. North and south it stretched and he stamped his feet upon the strange hard surface of green glass-like material. It was smooth in texture and extraordinary straight and level. For miles he could look in both directions but, gaze as he might, no slightest sign of buildings could he detect.

Here was a poser indeed, where had the suburbs of New York gone? Had even New York itself joined the lost legion in limbo? Winters stood in indecision and finally started tramping northward along the road. About a mile further along had once been the town of White Plains. It was nearby and, even if no longer in existence, would make as good a starting point as any. His pace was slow, but the fresh air and bright sunshine set the blood coursing through his veins and he went faster as he felt his strength returning with each step. He had gone half an hour and seen no sign of human habitation when a man came out upon the glass roadway a hundred yards ahead of him. He was dressed in red and russet and held one hand over his eyes, peering at Winters, who hesitated and then continued to approach with a wild thrill surging through his veins.

The man seemed in some vague way different. His skin was dark and tanned; features full and rounded; and eyes (Winters observed as he got nearer) a soft brown. The supple body seemed alert and exuded the very breath of health, yet it was indefinably sensuous and indolent—graceful in movement. He could not for the life of him decide even what race this man of the future represented perhaps he was a mixture of many. Then the man made a curious gesture with his left hand—a sort of circle waved in the air. Winters was puzzled, but believing it was meant for greeting imitated it awkwardly.

"Wassum! You have chosen a slow way to travel!"

"I am in no hurry," replied Winters, determined to learn all he could before saying anything himself. He had to repress his natural emotions of excitement and joy. He felt an urge to shout aloud and hug this stranger in his arms.

"Have you come far?"

"I have been travelling for years."

"Come with me and I will take you to our orig. No doubt you will want food and drink and walling." The words were drawled and his walk was slow: so much so that Winters felt a slight impatience. He was to feel this constantly among these people of the future.

The surprising thing, when he came to think about it, was that the man's speech was plain English, for which he was thankful. There were new words, of course, and the accent was strange in his ears—a tang of European broad As and positively continental Rs. He was wondering if radio and recorded speech had been the causes of this persistence of the old tongue when they came to a pleasant clearing lined with two-story houses of shiny brown. The walls were smooth as if welded whole from some composition plastic. But when he entered a house behind his guide he perceived that the entire wall admitted light translucently from outside and tiny windows were placed here and there purely for observation and air. He had little time to look around, for a huge dark man was eyeing him beneath bushy gray eyebrows.

"A stranger who came on foot," said his guide and (to Winters) "Our chief Forester." Then he turned abruptly and left them together, without the slightest indication of curiosity.

"Wassum, stranger! Where is your orig?" asked the Forester.

"My orig? I don't understand."

"Why, your village of course!"

"I have none."

"What! A trogling?"

"I don't understand."

"A wild man—a herman—don't you understand human speech?"

"Where I come from there were several forms of human speech, sir."

"What is this? Since the dawn of civilization two thousand years ago there has been one common speech throughout the world!"

Winters made an excited mental note of the date. Two thousand years then, at the least, had elapsed since he entered his sleeping chamber!

"I have come to learn, sir. I should like to spend several days in your village observing your life in ..er.. an elementary sort of way. For instance, how do you obtain your food here in the middle of a forest. I saw no farms or fields nearby."

"You are wassum to the walling, but farms—what are they? And fields! You will travel many a mile before you find a field near here, thanks to our ancestors! We are well planted in fine forests."

"But your food?"

The Forester raised his eyebrows. "Food—I have just said we have fine forests, a hundred square kilos of them—food and to spare! Did you walk with your eyes shut?"

"Where I come from we were not used to find food in forests, exactly. What sort of food do you get from them—remember I said I wanted elementary information, sir."

"Elementary indeed! Our chestnut flour for baking,

naturally, our dessert nuts and our vegetables, like the locust bean, the Keawe, the Catalpea and a dozen others—all the food a man could desire. Then the felled logs bear their crops of mushrooms—we have a famous strain of beefsteak mushroom in this orig. And of course the mast-fattened swine for bacon and winter-fats and the pitch pines for engine oils—the usual forest crops. How can it be that you are ignorant of the everyday things which even schoolboys know?"

"Mine is a strange story, sir," replied Winters. "Tell me what I ask and I will tell you later anything you want to know about myself. Tell me things as though I were—oh, from another planet, or from the distant past," and Winters forced a laugh.

"This is a strange request!"

"And my story, when I tell it to you, will be stranger still—depend upon it!"

"Ha! Ha! It should prove amusing—this game! Well then, this afternoon I will spend showing you about and answering questions. After our meal tonight you shall tell me your story—but I warn you! Make it a good one—good enough to repay me for my time!"

● They went out into the sunlight together. The village proved to be a gathering of about fifty large houses stretching for half a mile around a long narrow clearing. The background consisted of the huge trunks, gnarled branches and dark green of the forest. The Forester himself was a rather brisk old fellow, but the villagers seemed to strike again that vague chord of strangeness—of indolence—which he had noticed in his first acquaintance. Groups lay gracefully stretched out here and there under trees and such occasional figures as were in motion seemed to move with dragging feet, to Winters' business-like mind. It came upon him that these people were downright *lazy*—and this he afterwards observed to be almost invariably true. They accomplished the work of the village in an hour or two a day—and this time was actually begrudged and every effort was being made to reduce it. The chief effort of world-wide science was devoted to this end, in fact.

The people were dressed in bright colors and the green grass and the rich brown of the buildings made a background to the colorful picture. Everywhere he saw the same racial characteristics of dark, swarthy faces and soft, liquid, brown eyes. There was something strange about the eyes—almost as if they were not set straight in the face, but a trifle aslant. Very little attention was paid Winters, except for occasional glances of idle curiosity aroused by his unusual attire. He thought the women unusually attractive, but the men seemed somehow effeminate and too soft; not but that they were fine specimens of humanity physically speaking, but that their faces were too smooth and their bodies too graceful to suit his twentieth-century ideas of what vigorous manhood should look like. Their bodies suggested the feline—cat-like grace and lethargy combined with supple strength.

Winters was told that a thousand people usually formed an "orig." Just now there were several hundred extra inhabitants and a "colorig" had been prepared fifty miles to the north and trees had been growing for half a century there, making ready for the new colony.

"But why should you not simply make your village large enough to keep the extra people right here?"

"The forest supports just so many in comfort—we are having trouble now as it is."

"But are there no larger villages where manufacturing is done?"

"Of course. There are factory origs near the Great Falls in the north. Our air-wheel goes there twice a week—a two-hours' flight. But there are only a few people there; just enough to tend the machines."

The people of the village seemed happy and very much contented with life, but most of the younger men and women seemed to Winters too serious. Their dark faces hardly ever showed a smile. He entered several of the houses: among others that of the guild of cloth-makers. He was greatly interested, as if seeing an old friend, to observe wood-pulp fed through a pipe into the thread-making tubes to be hardened in an acid bath. He recognized, of course, the rayon process—new in his youth, but here considered ancient beyond history.

"How many hours a day do you work here?" he asked of the elderly attendant.

"I have worked three hours every day for the past week getting cloth ready for the new colonists," he replied grumblingly. "Perhaps we shall have some peace in this orig when the youngsters are gone! At least there will be plenty of everything to go around once again!"

As he spoke, a young man, evidently his son, entered the thread room and stared at his father and the Forester with cold, supercilious eyes. "Wassum!" said the attendant, but the youth merely scowled in reply. He examined Winters silently and with distrust and went out again without speaking.

"Your son is a solemn chap!"

"Yes. So is his generation—they take life too seriously."

"But do they never enjoy themselves?"

"Oh yes! There is the hunting moon in fall. The young men track the deer on foot and race him—sometimes for days on end—then throw him with their bare hands. My son is a famous deer-chaser. He practises all year long for the Autumn season."

"But are there no . . . er . . . lighter pastimes?"

"There are the festivals. The next one is the festival of autumn leaves. At the time of the equinox the young people dress in russets and reds and gold and dance in a clearing in the woods which has been chosen for its outstanding autumn beauty of color. The young women compete in designing costumes."

"But the younger ones—the children?"

"They are at school until they are twenty years of age. School is the time of hard work and study. They are not permitted games or pastimes except such exercise as is needed to keep them in health. When they finish school, then they enter upon the rights and pleasures of their generation—a prospect which makes them work the harder to finish their schooling as soon as may be."

● As they went out into the sunlight once more Winters observed a small airship settling down in the village campus. It was the airwheel, the Forester said, and would not leave again until dusk.

"I have never been in one," said Winters.

"You *are* a trogling," exclaimed the Forester. "Suppose we go up for a short flight, then?" and Winters eagerly agreed. They walked over to the machine which Winters examined curiously. Here, at least, three thousand years of improvements were amply noticeable. The

enclosed cabin would seat about twenty persons. There were no wings at all, but three horizontal wheels (two in front and one in the rear) above the level of the cabin. A propeller projected from the nose and this was still idling when they arrived. The Forester explained his wishes to the pilot who asked which direction they should prefer to take.

"South to the water and back!" put in Winters, with visions of the thriving New York metropolitan area of his day running through his memory. They took their places and the air-wheel rose gently and with only a faintly audible hum—it was practically silent flight and made at enormous speed.

In ten minutes the sea was in sight and Winters gazed breathless through the crystal windows upon several islands of varying sizes—clothed in the green blanket of dense forest. Slowly he pieced out the puzzle: there was Long Island, evidently, and over there showed Staten Island. Beneath him then lay the narrow strip of Manhattan and the forest towered over everything alike.

"There are ruins beneath the trees," said the Forester, noting his interest. "I have been there several times. Our historians believe the people of ancient times who lived here must have been afraid of the open air, for they either lived beneath the ground or raised stone buildings which could be entered without going out-of-doors: There are tunnels, which they used for roadways, running all beneath the ground in every direction."

CHAPTER III

"He Has An Appendix!"

● And now the airship turned about and as it did so Winters caught sight of one gray pile of masonry—a tower-tip—showing above the forest. Surely it must have taken thousands of years to accomplish this oblivion of New York! And yet, he thought to himself, even one century makes buildings old.

He scarcely looked out of the window on the way back, but sat engrossed in sad thoughts and mournful memories. They landed once more in the village clearing and he continued his tour under the Forester's guidance, but a recounting of this would be tedious. When the afternoon was over he had gathered a confusing mass of general information about life in the new age. Metals were carefully conserved and when a new colony was started its supply of metal utensils and tools was the final great gift of the parent villages. Farming was entirely unknown, and grain—which the Forester did not know except as "plant-seed"—was not used for food, although primitive races had once so used it, he said. Everything came from trees now, food, houses, clothing—even the fuel for their airships, which was wood alcohol.

The life of a villager was leisurely and pleasant, Winters decided. Hours of labour were short and the greater part of the day was devoted to social pleasures and scientific or artistic hobbies. There were artists in the village, mostly of some new faddist school whose work Winters could not in the least understand. (They painted trees and attempted to express emotions thereby.) But many beautiful pieces of sculpture were set about in some of the houses. Electric power was received through the air from the great Falls, where it was generated, and each socket received its current without wiring of any sort. The village produced its own food and made its own clothes and building materials, paper, wood-alcohol, turpentine and oils. And as this village lived so, apparently, did the rest of the world.

As Winters pictured this civilization, it consisted of a great number of isolated villages, each practically self-sufficient, except for metals. By taking the air-wheel from one village to the next and there changing for another ship, a man could make a quick trip across the continents and oceans of the globe. But science and art were pursued by isolated individuals, the exchange of ideas being rendered easy by the marvellously realistic television and radio instruments.

● At dusk they returned to the Chief Forester's house for dinner.

"I must apologize to you for the food," said he. "We are on slightly curtailed supplies, due to our population having grown faster than our new plantings. Oh, you will have a good meal—I do not mean to starve you,—but merely that you will be expected not to ask for a second service of anything and excuse the absence of luxuries from my table." His great body dropped into an upholstered chair.

"Is there no way to arrange things except by rationing yourselves while you wait for the new forests to bear crops?"

The Forester laughed a trifle bitterly. "Of course—but at a price. We could easily fell some trees for mushroom growing (they grow on dead logs) and also we could cut into the crop of edible pith-trees a little before maturity—and so all along the line. It would set us back in our plans a few years at the most, but there is no use talking about it. The Council of Youth has claimed the Rights of its Generation. The future is theirs, of course, and they object to our spending any of their resources now. We older people are a little more liberal in our views—not selfishly, but on a principle of common-sense. There have been some bitter words, I'm afraid, and the matter is by no means settled yet—for their attitude is almost fanatical and lacks all reason. But there is no need to bother you with our local affairs," and he turned the conversation into other channels.

He was forever using the expression "thanks to our ancestors," a point which Winters noted with surprise. So far one thing had eluded Winters completely: that was the history of the past ages during which all these drastic changes had come about. When the time came that he was bade tell his story, at the conclusion of the meal, he thought a moment as to how he might best obtain this information.

"I have travelled far," he said, "But in time—not in distance."

The Forester held a forkful of food poised in the air, eyebrows raised.

"What nonsense is this?" he demanded.

"No nonsense . . . your mushrooms *are* delicious . . . I have succeeded in controlling the duration of a state of suspended animation. I went to sleep many years ago; woke up this morning."

The Forester was incredulous.

"How long do you pretend to have slept?"

"I don't know for sure," replied Winters. "My instruments showed a certain figure, but to be at all certain I should prefer that you tell me the history of the world. No need of anything but the rough outlines."

"Ha, Ha! You promised me a story and you are most ingenious in fulfilling your promise, stranger!"

"I am, on the contrary, absolutely serious!"

"I cannot believe it—but it may be an amusing game. Let me see . . . Last year the first breadfruit trees bore in the lower temperate zones of the earth (that is a piece of it in your plate). It has greatly changed our mode of life and it may soon be unnecessary to grind chestnut flour for baking."

"Interesting," replied Winters. "But go back a thousand years more."

The Forester's eyes opened wide. Then he laughed delightedly. "Good! It is no lowly boaster, eh! A thousand years . . . That would be about the time of the great aluminum process. As you know, prior to that time the world was badly in need of metals. When Koenig perfected his method for producing aluminum from clay the economics of the world was turned topsy-turvy and . . . what! Farther back than a thousand years!"

"I think you might try two thousand."

● The Forester exploded with laughter and then sobered at a sudden thought. He glanced shrewdly at his companion a moment, and a slight coldness appeared in his eyes.

"You are not by any slightest chance serious?" he asked.

"I am."

"It is absurd! In those days the human body still had an appendix—that was just after the Great Revolution when the Wasters were finally overthrown and True Economics lifted her torch to guide the world on its upward path. Two thousand years ago! Thence dates all civilized history! Such archaic customs as organized superstitions, money and ownership by private people of land and a division of humanity into groups speaking different languages—all ended at that time. That was a stirring period!"

"Well then, go back another five hundred years."

"The height of the false civilization of Waste! Fossil plants were ruthlessly burned in furnaces to provide heat, petroleum was consumed by the million barrels, cheap metal cars were built and thrown away to rust after a few years' use, men crowded into ill-ventilated villages of a million inhabitants—some historians say several million. That was the age of race-fights where whole countrysides raised mobs and gave them explosives and poisons and sent them to destroy other mobs. Do you pretend to come from that shameful scene?"

"That is precisely the sort of thing we used to do," replied Winters, "although we did not call it by the same set of names." He could barely repress his elation. There could no longer be the slightest doubt of it—he was alive in the year 5000! His clock had been accurate!

The Forester's face was growing red. "Timberfall! You have been amusing long enough—now tell me the truth: Where is your orig?"

"I don't understand. I have told you the truth."

"Stupid nonsense, I tell you! What can you possibly hope to gain from telling such a story? Even if people were such fools as to believe you, you could hardly expect to be very popular!"

"Why," said Winters in surprise, "I thought you were so thankful for all your ancestors had done for you? I am one of your ancestors!"

The Forester stared in astonishment. "You act well," he remarked drily. "But you are, I am sure, perfectly aware that those ancestors whom we thank were the planners for our forests and the very enemies of Waste. But for what should we thank the humans of three thousand years ago? For exhausting the coal supplies of the world? For leaving us no petroleum for our chemical factories? For destroying the forests on whole mountain ranges and letting the soil erode into the valleys? Shall we thank them, perhaps, for the Sahara or the Gobi deserts?"

"But the Sahara and the Gobi were deserts five thousand years before my time."

"I do not know what you mean by 'your' time. But if so, all the more reason you should have learned a lesson from such deserts. But come! You have made me angry with your nonsense. I must have some pleasant sort of revenge! Do you still claim to be a living human from the Age of Waste?"

Winters' caution bade him be silent. The Forester laughed mischievously: "Never mind! You *have already* claimed to be that! Well then, the matter is readily proved. You would in that case have an appendix and . . . yes . . . hair on your chest! These two characteristics have not appeared in the last two thousand years. You will be examined and, should you prove to have lied to me, a fitting punishment will be devised! I shall try to think of a reward as amusing as your wild lies have proved."

His eyes twinkled as he pressed a button hidden in his chair arm and a minute later two young men entered. Winters was in no physical condition to resist and was soon stripped of his clothing. He was not particularly hairy of chest, as men of his age went, but hair there was unquestionably and the Forester stepped forward with an incredulous exclamation. Then he hurriedly seized the discarded clothing and felt the material carefully—examining the linen closely in the light of the electric lamp concealed in the wall.

"To the health room with him!" he cried.

Poor Winters was carried helplessly down a corridor and into a room lined with smooth white glass and set about with apparatus of an evident surgical nature. The place was odoriferous with germicide. He was held against a black screen and the Forester snapped on an X-ray tube and peered at his nude body through a mask of bluish glass. After a minute he left the room and returned again almost instantly with a book in his hands. He opened to a page of photographs and studied them carefully, once more peering at Winters through the mask. Finally he grunted in stupefaction and with close-pressed lips and puzzled eyes turned to the two attendants.

"He has an appendix—there can be no doubt of it! This is the most amazing thing I have ever imagined! The stranger you see before you claims to have survived from the ancient days—from the age of waste! And he has an appendix, young comrades! I must talk to the biologists all over the country—the historians as well! The whole world will be interested. Take him along with you and see that he is provided with walling for the night."

He turned to the door and Winters heard him in the next room talking excitedly over the radio-telephone. The two young attendants led him along the hall and as

he passed he could observe that the Forester was speaking to a fat red-headed, red-faced man, whose features showed in the televisor—and who evidently was proving difficult to convince. Winters stared a minute for this was the first man he had seen whose face was anything except swarthy and slender.

Winters was led down the hall and permitted to resume his clothing. He was in an exalted mood. So his arrival in this new world was creating a stir after all! In the morning the airwheel would perhaps bring dozens of scientists to examine into his case. He was beginning to feel weak and fatigued after his exciting day, but this latest thrill gave a last flip to his nerves and gave him strength just long enough to prove his own undoing.

One of the attendants hurried out of sight as they left the house. The other guided him along the edge of the village.

"We young members of the village have a gathering tonight, sir. It is called the Council of Youth and at it we discuss matters of importance to our generation. Would it be too much to ask that you address our meeting and tell us something of your experiences?"

His vanity was stirred and he weakly agreed, tired and sleepy though he was. The meeting place was just a little distance away, explained his guide.

In the meantime the youth who had hastened on ahead had entered a small room off the assembly hall. The room contained only three persons and they looked up as the newcomer entered.

"It is as we thought, comrades, the Oldsters have brought him here for some purpose of their own. He pretends to have slept for three thousand years and to be a human relic of the Age of Waste!"

The others laughed. "What will they try on us next?" drawled one lazily.

"Stronghold is bringing him here," continued the latest arrival, "and will persuade him to speak to us in the meeting, if he can. You understand the intent?"

There was a wise nodding of heads. "Does he know the law of the Council?"

"Probably, but even so it is worth the attempt—you know I'm not certain myself but that he may be from the old days—at least he is a startling good imitation. The man has hair on his body!"

There was a chorus of shocked disbelief, finally silenced by a sober and emphatic assurance. Then a moment of silence.

"Comrades, it is some trick of the Oldsters, depend upon it! Let the man speak to the Council. If he makes a slip, even a slight one, we may be able to work on the meeting and arouse it to a sense of our danger. Any means is fair if we can only prevent our inheritance being spent! I hear that the order to fell the half-matured pith-trees will go out tomorrow unless we can stop it. We must see what we can do tonight—make every effort."

● When Winters arrived at the hall the three young men stood on the platform to welcome him. The room was low-raftered and about fifty feet square. It was filled with swarthy young men and women. The thing that most impressed Winters was the luxury of the seating arrangements. Each person sat in a roomy upholstered arm-chair! He thought of the contrast that a similar meeting-hall in his own times would have afforded—with its small stiff seats uncomfortably crowded together and its stuffy hot atmosphere.

The lighting was by electricity concealed in the walls and gave at the moment a rosy tint to the room, though this color changed continually to others—now red or purple or blue—and was strangely soothing. There was a lull in the general conversation. One of the young leaders stepped forward.

"Comrades! This stranger is of another generation than ours. He is come especially to tell us of conditions in the ancient days—he speaks from personal experience of the Age of Waste, comrades, from which times he has survived in artificial sleep! The Forester of our orig, who is *old* enough to know the truth, has so informed us!" Winters missed the sarcasm. He was tired now and regretting that he had consented to come.

There was a stir of astonishment in the audience and a low growling laughter which should have been a warning, but Winters, full of fatigue, was thinking only of what he should say to these young people. He cleared his throat.

"I am not sure that I have anything to say that would interest you: Historians or doctors would make me a better audience. Still, you might wish to know how the changes of three thousand years impress me. Your life is an altogether simpler thing than in my day. Men starved then for lack of food and youth had no assurance of even a bare living—but had to fight for it." (Here there were a few angry cheers, much to Winters' puzzlement.) "This comfortable assurance that you will never lack food or clothing is, to my mind, the most striking change the years have brought."

He paused a moment uncertainly and one of the young leaders asked him something about "if we were perhaps trying to accomplish this assurance too quickly."

"I am not sure that I know what you mean. Your Chief Forester mentioned something today of a question of economics. I am not familiar with the facts. However, I understand you have a very poor opinion of my own times, due to its possibly unwise consumption of natural resources. We had even then men who warned us against our course of action, but we acted upon the belief that when oil and coal were gone mankind would produce some new fuel to take their place. I observe that in this we were correct, for you now use wood alcohol—an excellent substitute."

A young man leaped to his feet excitedly. "For that reason, comrades," he said in a loud voice, "this stranger of course believes his age was justified in using up all the oil and fuel in the world!"

There was a slow growling which ended in a few full-throated cries and an uneasy stirring about in the audience. Winters was growing dazed with his need for rest and could not understand what was going on here.

"What you say interests us very much," said another of the men on the platform beside him. "Was it very common to burn coal for its mere heat?"

"Yes. It burned in every man's house—in my house as well."

There was an ugly moving about in audience, as though the audience was being transformed into a mob. The mob, like some slow lumbering beast, was becoming finally aroused by these continual pin-pricks from the sharp tongues of its leaders.

"And did you also use petroleum for fuel?"

"Of course. We all used it in our automobiles."

"And was it usual to cut down trees just for the sake of having the ground clear of them?"

"Well . . . yes. On my own land I planted trees, but I must say I had a large stretch of open lawn as well."

Here Winters felt faint and giddy. He spoke quietly to the young man who had brought him. "I must lie down, I'm afraid. I feel ill."

"Just one more question will be all," was the whispered reply. Then aloud: "Do you think we of the Youth Council should permit our inheritance to be used up—even in part—for the sake of present comfort?"

"If it is not done to excess I can see nothing wrong in principle—you can always plant more trees . . . but I must say good night for I am. . . ."

CHAPTER IV

Revolt of the Youth

● He never finished his sentence. A very fury of sound arose from the hall of the Council. One of the leaders shouted for silence.

"You have heard, comrades! You observe what sort of man has been sent to address us! We of Youth have a lesson to learn from the Age of Waste, it appears! At least the Oldsters think so! The crisis that has arisen is a small matter, but if we should once give in when will the thing stop? What must they think of our intelligence if they expect us to believe this three thousand-year sleep story? To send him here was sheer effrontery! And to send him here with *that* piece of advice passes beyond all bounds of toleration. Timberfall! There can be only one answer" (here he turned to glare at poor dazed Winters, stupefied by the effect of his long emaciation). "We must make such an example of this person as shall forever stamp our principles deep in the minds of the whole world!"

There were loud shouts and several young people rushed up on the platform and seized Winters.

"He has confessed to breaking the very basic laws of Economics!" shouted the leader. "What is the punishment?"

There were cries of "Kill him! Exile! Send him to the plains for life!" and over and over one group was chanting savagely "Kill him! Kill him!"

"I hear the sentence of death proposed by many of you," cried the leader. "It is true that to kill is to waste a life—but what could be more fitting for one who has wasted things all his life?" (Loud cries of furious approval) "To your houses, every one of you! We will confine this creature who claims to be three thousand years old in the cellar of this hall. In the morning we will gather here again and give these Oldsters our public answer! And comrades! A piece of news for your ears alone—Comrade Stronghold has heard that in the morning the Oldsters will issue a felling order on the immature pith-trees!"

And now was such a scene of rage and violence that the walls shook and Winters was dragged away with dizzy brain and failing feet and thrust upon a couch in a stone-walled room beneath the hall. He fell instantly in utter exhaustion and did not hear the tramp of departing feet overhead. His horror and fright had combined with his fatigue to render him incapable of further emotion. He lay unconscious, rather than asleep.

Above in the small room off the now empty hall three young men congratulated each other, their soft brown eyes shining exultantly, and chatted a few minutes in great joy that they had protected the rights of their generation, regardless of the means which had been used to this desirable end. They parted for the night with that peculiar circling movement of the hand that seemed to have taken the place of the ancient hand-shaking.

But while they talked (so swift does Treason run) a young man crouched in the shadows back of the Forester's house and fumbled with the latch of a small door on the forest side. As the young men were bidding each other good night, a voice was whispering swiftly in the ear of the Chief Forester, whose rugged face and bristling eyebrows betrayed in turn astonishment, indignation, anger and fierce determination.

Winters woke to watch a shaft of dawn-light lying upon the stone floor. His body was bruised from the rough handling he had received and his wasted muscles felt dull and deadened. But his brain was clear once again and he recalled the events of the meeting. What a fool he had been! How he had been led on to his own undoing! His eyes followed the shaft of light up to a grating set in the stone wall above his couch and he could see a little piece of sky softly blue there with a plump little cloud sailing in it, like a duck in a pond. There came upon him a wave of nostalgia. Oh to see a friendly face—or one homely thing, even a torn piece of newspaper lying on the cellar floor! But there was no use in such wishes. Thirty centuries lay between those things and himself—lay like an ocean between a shipwrecked sailor and his homeland.

And then came other thoughts, his natural fund of curiosity arising in him once again. After all, this age was a reaction against his own. There had been two extremes, that was all history would say of it. Truth lay in neither, but in some middle gentler path. Mankind would find the road in time—say another thousand years or more. But what difference to him now? In a few more hours he would be dead. Presently the young men would come for him and he would be their sacrifice for some fancied wrong. In his weakened condition the whole thing struck him as unutterably pathetic and tears welled into his eyes until they were brushed away as the bitter bracing humor of the situation dawned upon his mind. As he mused he was startled to notice a shadow pass across the window grating and he thought he heard low voices.

Now in an instant he was full of lively fears. He would not be taken to his death so tamely as this! He turned over on the couch to get upon his feet and felt a hard object beneath him. He felt and brought forth his revolver which he fell at once to examining—ears and senses attuned to hints of danger, though nothing further came. The weapon was an air-pistol firing .22 calibre lead slugs. It was deadly only at very close ranges—thirty feet or less, perhaps—and the extending lever compressed enough air for ten shots. It was something, at all events. Hastily he worked the lever, loaded and pulled the trigger to hear a satisfying "smack" of the lead against the stone wall.

Now his mind was working full tilt and he brought the file from his belt and turned to the grating above his couch. If he could sever the bars he could manage to squeeze through the window! To his amazement these bars proved to be of wood—and his heart lifted in hope. The saw was out of his belt and he was at work in an instant. By dint of much arm-ache he severed four of the bars in as many minutes. Day was now dawning apace and

a panic of haste seized him; he brought the hand-axe into play and with three blows had smashed the remaining wood in the window. As he did so a shadow approached and a face was thrust forward, blocking out the light. Winters crouched below with pistol pointed, finger on trigger.

"Here he is!" said the face in shadow and Winters recognized the voice of the Chief Forester and held his fire.

"Take my hand, stranger, and climb up out of there. We have been looking for you half an hour. Oh, have no fear, we will not permit you to come to harm!"

But Winters was cautious. "Who will protect me?"

"Hurry, stranger! You have fallen afoul of our young hot-heads in the orig—I blame myself for not taking greater thought—but there are a hundred Oldsters here with me. You will be safe with us."

And now Winters permitted himself to be helped through the window and up into the full light of morning. He was surrounded by men who gazed at him with interest and respect. Their attitude calmed his last suspicions.

"We must hurry," said the Forester. "The younger men will resist us, I am afraid. Let us reach my own house as soon as possible."

The party started across the clearing and two young men appeared almost at once in the doorway of a building near by. At sight of Winters in the midst of the Oldsters they turned and raced off in separate directions, shouting some indistinguishable cry as they ran.

"We must go faster than this!"

A short fat man with a red face and reddish hair put his arm beneath Winters' shoulders and half carried him along. His face was familiar and Winters remembered the man he had seen in the televisor the day before. His strength was enormous and his energy indefatigable—a tie that drew Winters to him in this age of indolence. "I am Stalvyn of History at the next orig," he boomed at Winters as they hurried along. "You are so valuable to me that I hope you do not mind if I take a personal interest in your protection!"

● They had a quarter of a mile to go and had half accomplished the distance when a mob of shouting youths burst from behind a house just ahead of them. There was a pause as though their natural disinclination to physical exertion might even yet prevent the clash. But their leaders were evidently urging them on and suddenly they charged down amid a shower of stones and waving of clubs. In an instant the shock was felt and a furious mêlee commenced—a primitive angry fight without science or direction.

Here two youths beat an elderly man senseless with clubs and sprang in unison upon the next victim. There some mature, full-muscled bull of a man ran berserk among striplings, crushing them in his great arms or flailing fist like hams at their onrushing faces. As they fought, they kept moving toward their objective and had gone almost another hundred yards before the youths retreated. The superior numbers of the older ones had swung the balance.

Fifty men, however, were all that remained around the Chief Forester. The others had either deserted the fight or been injured—perhaps killed, thought Winters, looking back at a score of still figures lying on the earth. The youths had retired only a hundred feet and still kept pace with the fugitives. Fresh bands of young men were hurrying from every direction and it would be a matter of minutes before the attack would recommence with the odds on the other side this time.

Winters and Stalvyn, his self-appointed bodyguard, had not taken part in the struggle, for they had been in the center of the rescue party. Now they worked to the front of the party where the Forester strode along determinedly. Winters showed his pistol. "With this thing I can kill them as they run there. Shall I use it sir?"

The Forester grunted. "Kill them, then. They are coming now to kill you!"

As he spoke the mob of youths rushed upon them in a murderous fury. The older men closed together in a compact mass and Winters shot into the front rank of the attackers, to see three of them topple over and thereby lessen the shock of the charge, for those who followed tripped over the fallen. And now Stalvyn and the Forester stepped forward and around these immovable figures the fight raged. Winters crouched behind them, swiftly pulled back his lever, loaded bullets and pulled the trigger like an automaton in a nightmare. Cries of passion and pain mingled with the thud of blows and the panting gasps of the fighters. It was a savage scene, the more shocking because of the unfitness of these quiet people for such work.

Suddenly the attackers withdrew sullenly, bearing injured with them. Two dozen remaining Oldsters looked dazedly around—free now to proceed to shelter. Fifty or more figures lay about on the ground and the Forester called out to the watchers in the windows to come and give first aid to friend and foe alike. This work was commenced at once, but with characteristic slowness, and he led his little band to the door of his house and inside.

"Give the stranger some food and drink, Stalvyn," drawled a tall thin man with ungainly limbs, who proved to be the biologist from an orig nearly a thousand miles away. "If I know our Youth they would never have wasted sustenance on a man who was so soon to die!" and he smiled a lazy sardonic smile at Winters as he placed in his hands a tumbler full of brown liquid. "Drink it without fear. It will both stimulate and nourish."

Winters was in a state of collapse now and Stalvyn had to help him drink and then carried him over to a couch. The biologist spent a few minutes examining him. "He must rest," he announced. "There will be no questions asked him today. I will prepare some medicine for him." Whereupon everyone left the room and Winters swallowed more drink and dropped fathoms deep in slumber. A man was set to guard the door of his room and the biologist tended him day and night. For a full week he was not permitted to wake. He had vague impressions as he slept of being rolled over, bathed, fed, massaged and watched over—impressions that were as dreams in an ordinary sleep. Under such expert ministration the thin cheeks filled out and the wasted flesh became plump and smooth.

When Winters awoke it was late afternoon. His blood pulsed strongly through his body and he was wide awake the instant his eyes opened. There on a stool were set out his clothes, and he got to his feet and dressed. His belt still contained the pistol and hatchet as well as the smaller tools. Feeling like a new man he strode to the door and opened it, to be surrounded presently in another room by a swarthy group of a dozen of the greatest scientists in the world—for the news had by this time spread everywhere

and there had been time for travel from the most distant points. And now there followed a long period of questions and examinations. Stalvyn and the historians plied him with posers as to the life and habits of his world; the biologists demanded the secret of his sleeping potion and control of the period of suspended animation; he was put before the fluoroscope and his appendix photographed; his measurements were taken and plaster moulds of his hand, foot and head were cast for a permanent record.

Through it all Winters had a feeling of consummation—this was one of the things he had planned when he set off on his voyage into the future. Here was sane intelligence taking advantage of his work and respecting him for his exploit. But one thing was lacking completely. He had no sense of belonging to these people. He had hoped to find gods in human form living in Utopia. Instead, here were men with everyday human passions and weaknesses. True, they had progressed since his day—but his insatiable curiosity itched to learn what the future might produce.

After an evening meal which all partook together, Winters retired to his room with the Chief Forester, the biologist and Stalvyn and the four men sat talking lazily.

"What do you plan to do now?" drawled the biologist.

Winters sighed. "I don't know exactly."

"I would ask you to settle down in my orig here," remarked the Forester, "but most of our young people and many of the Oldsters who should know better hold you to blame for the recent troubles. I am helpless before them."

"Hold *me* to blame!" exclaimed Winters bitterly. "What had I to do with it?"

"Nothing, perhaps. But the principle of the rights of the new Generation is still unsettled. The Council of Youth is obstinate and must be brought to see the sensible side of the matter. Their leaders pretend you, in some way, have been brought here to persuade them to cut down trees right and left at the whim of the nearest Oldster. Where it will end, I cannot say."

● Stalvyn laid a friendly hand on his shoulder. "Human nature is seldom reasonable. Of course there is no logic in their attitude. Forget it! We will get you quietly into an airship and you shall come away from here and live with me. Together we will review and rewrite the history of your times as it has never been done!"

"Stop a moment! Do you mean that I shall have to escape secretly from this village?"

The others looked sheepish and the Forester nodded his head. "I am helpless in the matter. I could get perhaps twenty or thirty men to do my bidding—but you see, most of the villagers will not concern themselves with your fate. It is too much trouble to bother about it at all."

"Are they afraid of the youngsters?"

"No, of course not! They greatly outnumber the youths. They merely are not willing to work beyond the village figure of one hour and fifty minutes a day so they say. I'm afraid you will not find any men to take your side except the four of us and a handful of my oldest men. That's the way the world is made, you know!" and he shrugged his shoulders expressively.

"It is a simple matter to escape from this house," suggested the biologist. "Why not tour quietly around the globe and see our world entire before you decide upon your future plans?"

Winters shook his head wearily. "I thank you for your kindness, gentlemen. I would never find a place for myself in this age. I gave up my own age for the sake of an ideal. I am searching for the secret of happiness. I tried to find it here, but you do not know it any more than we did three thousand years ago. Therefore I shall say goodbye and—go on to some future period. In perhaps five thousand years I shall awaken in a time more to my liking."

"Can your body support another long period of emaciation?" drawled the biologist. "To judge from your appearance you have hardly aged at all during your last sleep—but . . . five thousand years!"

"I feel as if I were a little older than when I left my own times—perhaps a year or two. Thanks to your attention I am again in excellent health. Yes, I should be able to survive the ordeal once again."

"Man! Oh man!" groaned the red-headed Stalvyn. "I would give my right hand to take a place with you! But I have my duty to my own times."

"Is your hiding-place near here?" asked the Forester.

"Yes. But I prefer to tell no one where it is—not even you three. It is well hidden and you cannot help me."

"I can!" put in the biologist. "I studied your metabolism as you lay unconscious all this week and I have prepared a formula. From it I shall make a drink for you to take with you. When—or *if*—you wake from your long sleep you must swallow it. It will restore your vitality enormously in a few hours.

"Thank you," said Winters. "That might make all the difference between success and failure."

"How are you going to reach your hiding place? Suppose some youth sees you and follows—remembering old grudges as youth can?"

"I must leave here secretly just before dawn," said Winters thoughtfully. "I know in a general way where to go. By daylight I shall be close by and shall have hidden myself forever long before anyone in the village is awake."

"Well—let us hope so! When will you start?"

"Tomorrow morning!"

They parted for the night with many a last word of caution and advice. Winters lay down to sleep and it seemed only a few seconds before the Forester stood over him shaking him awake. He arose and made sure of such things as he was to take with him. Stalvyn and the biologist were on hand in the darkness (they did not dare show a light) and Winters took a light breakfast and said his goodbyes. The three friends watched his body show shadowy against the trees and vanish into the dark night.

Winters walked with great care along the hard-surfaced roadway for almost an hour. He was sure he had made no slightest sound. He felt he must be almost at the right spot and left the road for the woods where he waited impatiently for the graying east to brighten. He spent half an hour in the shrubbery beside the road before he could see clearly enough to proceed. Just before he turned away he glanced from his leafy hiding back along the stretch of highway. In the distance, to his horror, he observed two figures hurrying toward him!

With panting fear he slipped back into the woods and cruised over the ground looking for his one particular tree-trunk out of all those thousands. Seconds seemed like

(Concluded on Page 796)

(Illustration by Paul)

It was the last thing he ever saw. The monster turned from Chivers and the terrible cups, dripping with blood, descended on Maspic's own eyes.

BOOK SHOP
1008 FULTON ST.
FRESNO, CALIFORNIA

DWELLER IN MARTIAN DEPTHS

By CLARK ASHTON SMITH

● Only when we begin to explore other worlds will we experience fully the innumerable forms of life, and the mysteries of the world of living things. No one, perhaps, is so competent to write about these mysteries as Clark Ashton Smith. With his scientific knowledge, and his imagination, rivalling that of Poe, he creates strange and bizarre worlds.

He takes for his problem that of Mars, and pictures a series of events that are perfectly plausible. He deals with a world of sensation that we experience perhaps only in dreams, yet one, given new conditions that might be part of everyday existence.

And then, if you like, there is a little moral to this story that our acute readers might discover. It is a moral that has a great deal of meaning in our present day earthly troubles.

● Swelling and towering swiftly, like a genie loosed from one of Solomon's bottles, the cloud rose on the planet's rim. A rusty and colossal column, it strode above the dead plain, through a sky that was dark as the brine of desert seas.

"Looks like a blithering sandstorm," commented Maspic.

"It can't very well be anything else," agreed Bellman rather curtly. "Any other kind of storm is unheard of in these regions. It's the sort of hell-twister that the Aihais call the *zoorth*—and it's coming our way, too. I move that we start looking for shelter. I've been caught in the *zoorth* before, and I don't recommend a lungful of that ferruginous dust."

"There's a cave in the old river bank, to the right," said Chivers, the third member of the party, who had been searching the desert with restless, falconlike eyes.

The trio of earthmen, hard-bitten adventurers who disdained the services of Martian guides, had started five days before from the outpost of Ahoom, into the uninhabited region called the Chaur. Here, in the beds of great rivers that had not flowed for cycles, it was rumored that the pale, platinum-like gold of Mars could be found lying in heaps, like so much salt. If fortune were propitious, their years of somewhat unwilling exile on the red planet would soon be at an end.

They had been warned against the Chaur, and had heard some queer tales in Ahoom regarding the reasons why former prospectors had not returned. But danger, no matter how dire or exotic, was merely a part of their daily routine. With a fair chance of unlimited gold at the journey's end, they would have gone down through Hinnom.

Their food supplies and water barrels were carried on the backs of three of those curious mammals called *vortlups*, which, with their elongated legs and necks, and horny-plated bodies, might seemingly have been some fabulous combination of llama and saurian. These animals, though extravagantly ugly, were tame and obedient, and were well adapted to desert travel, being able to go without water for months at a time.

For the past two days they had followed the mile-wide course of a nameless ancient river, winding among hills that had dwindled to mere hummocks. They had found nothing but worn boulders, pebbles, and fine rusty sand. Heretofore the sky had been silent and stirless; and nothing moved on the river-bottom, whose stones were bare even of dead lichen. The malignant column of the *zoorth*, twisting and swelling toward them, was the first sign of animation they had discerned in that lifeless land.

Prodding their *vortlups* with the iron-pointed goads which alone could elicit any increase of speed from these sluggish monsters, the earthmen started off toward the cavern-mouth descried by Chivers. It was perhaps a third of a mile distant, and was high up on the shelving shore.

The *zoorth* had blotted out the sun ere they reached the bottom of the ancient slope, and they moved through a sinister twilight that was colored like dried blood. The *vortlups*, protesting with unearthly bellows, began to climb the beach, which was marked off in a series of more or less regular steps that indicated the slow recession of its olden waters. The column of sand, rising and whirling formidably, had reached the opposite bank when they came to the cavern.

This cavern was in the face of a low cliff of iron-veined rock. The entrance had crumbled down in heaps of ferro-oxide and dark basaltic dust, but was large enough to admit with ease the earthmen and their laden beasts of burden. Darkness, heavy, as if with a weaving of black webs, clogged the interior. They could form no idea of the cave's dimensions till Bellman got out an electric torch from his bale of belongings and turned its prying beam into the shadows.

The torch served merely to reveal the beginnings of a chamber of indeterminate size that ran backward into night. It widened gradually, with a floor that was worn smooth as if by vanished waters.

The opening had grown dark with the onset of the *zoorth*. A moaning as of baffled demons filled the ears of the explorers, and particles of atom-like sand were blown in upon them, stinging their hands and faces like

powdered adamant.

"The storm will last for half an hour, at least," said Bellman. "Shall we go on into the cave? Probably we won't find anything of much interest or value. But the exploration will serve to kill time. And we might happen on a few violet rubies or amber-yellow sapphires, such as are sometimes discovered in these desert caverns. You two had better bring along your torches also, and flash them on the walls and ground as we go."

His companions thought the suggestion worth following. The *vortlups*, wholly insensible to the blowing sand in their scaly mail, were left behind near the entrance. Chivers, Bellman and Maspic, with their torch-beams tearing a clotted gloom that had perhaps never known the intrusion of light in all its former cycles, went on into the widening caves.

● The place was bare, with the death-like emptiness of some long-deserted catacomb. Its rusted floor and walls returned no gleam or sparkle to the playing lights. It sloped downward at an easy gradient, and the sides were water-marked at a height of six or seven feet. No doubt it had been in earlier aeons the channel of an underground offshoot from the river. It had been swept clean of all detritus, and was like the interior of some Cyclopean conduit.

None of the three adventurers was overly imaginative or prone to nervousness. But all were beset by certain odd impressions. Behind the arras of cryptic silence, time and again, they seemed to hear a faint whisper, like the sigh of sunken seas far down at some hemispheric depth. The air was tinged with a slight and doubtful dankness, and they felt the stirring of an almost imperceptible draft upon their faces. Oddest of all was the hint of a nameless odor, reminding them both of animal dens and the peculiar smell of Martian dwellings.

"Do you suppose we'll encounter any kind of life?" said Maspic, sniffing the air dubiously.

"Not likely." Bellman dismissed the query with his usual curtness. "Even the wild *vortlups* avoid the Chaur."

"But there's certainly a touch of dampness in the air," persisted Maspic. "That means water, somewhere; and if there is water, there may be life also—perhaps of a dangerous kind."

"We've got our revolvers," said Bellman. "But I doubt if we'll need them—as long as we don't meet any rival gold-hunters from the Earth," he added cynically.

"Listen." The semi-whisper came from Chivers. "Do you fellows hear anything?"

All three had paused. Somewhere in the gloom ahead, they heard a prolonged, equivocal noise that baffled the ear with incongruous elements. It was a sharp rustling and rattling as of metal dragged over rock; and also it was somehow like the smacking of myriad wet, enormous mouths. Anon it receded and died out at a level that was seemingly far below.

"That's queer," Bellman seemed to make a reluctant admission.

"What is it?" queried Chivers. "One of the millipedal underground monsters, half a mile long, that the Martians tell about?"

"You've been hearing too many native fairy tales," reproved Bellman. "No terrestrial has ever seen anything of that kind. Many deep-lying caverns on Mars have been thoroughly explored; but those in desert regions, such as the Chaur, were devoid of life. I can't imagine what could have made that noise; but, in the interests of science, I'd like to go on and find out."

"I'm beginning to feel creepy," said Maspic. "But I'm game if you others are."

Without further argument or comment, the three continued their advance into the cave. They had been walking at a fair gait for fifteen minutes, and were now at least half a mile from the entrance. The floor was steepening, as if it had been the bed of a torrent. Also, the conformation of the walls had changed: on either hand there were high shelves of metallic stone and columnated recesses which the flashed rays of the torches could not always fathom.

The air had grown heavier, the dampness was unmistakable. There was a breath of stagnant ancient waters. That other smell, as of wild beasts and Aihai dwellings, also tainted the gloom with its clinging fetor.

Bellman was leading the way. Suddenly his torch revealed the verge of a precipice, where the olden channel ended sheerly and the shelves and walls pitched away on each side into incalculable space. Going to the very edge, he dipped his pencil of light down the abyss, disclosing only the vertical cliff that fell at his feet into darkness with no apparent bottom. The beam also failed to reach the further shore of the gulf, which might have been many leagues in extent.

"Looks as if we had found the original jumping-off place," observed Chivers. Looking about, he secured a loose lump of rock, the size of a small boulder, which he hurled as far out as he could into the abyss. The earthmen listened for the sound of its fall; but several minutes went by, and there was no echo from the black profound.

Bellman started to examine the broken-off ledges on either side of the channel's terminus. To the right he discerned a downward-sloping shelf that skirted the abyss, running for an uncertain distance. Its beginning was little higher than the channel-bed, and was accessible by means of a stair-like formation. The shelf was two yards wide; and its gentle inclination, its remarkable evenness and regularity conveyed the idea of an ancient road hewn in the face of the cliff. It was over-hung by the wall, as if by the sharply sundered half of a high arcade.

"There's our road to Hades," said Bellman. "And the down-grade is easy enough at that."

"What's the use of going further?" said Maspic. "I, for one, have had enough darkness already. And if we were to find anything by going on, it would be valueless—or unpleasant."

● Bellman hesitated. "Maybe you're right. But I'd like to follow that ledge far enough to get some idea of the magnitude of the gulf. You and Chivers can wait here, if you're afraid."

Chivers and Maspic, apparently, were unwilling to admit whatever trepidation they might have felt. They followed Bellman along the shelf, hugging the inner wall. Bellman, however, strode carelessly on the verge, often flashing his torch into the vastitude that engulfed its feeble beam.

More and more, through its uniform breadth, inclination and smoothness, and the demi-arch of cliff above, the shelf impressed the earthmen as being an artificial road. But who could have made and used it? In what forgotten ages and for what enigmatic purpose had it been

designed? The imagination of the terrestrials failed before the stupendous gulfs of Martian antiquity that yawned in such tenebrous queries.

Bellman thought that the wall curved inward upon itself by slow degrees. No doubt they would round the entire abyss in time by following the road. Perhaps it wound in a slow, tremendous spiral, ever downward, about and about, to the very bowels of Mars.

He and the others were awed into lengthening intervals of silence. They were horribly startled, when, as they went on, they heard in the depths beneath, the same peculiar long-drawn sound or combination of sounds which they had heard in the outer cavern. It suggested other images now: the rustling was a file-like scraping; the soft, methodical, myriad smacking was vaguely similar to the noise made by some enormous creature that withdraws its feet from a quagmire.

The sound was inexplicable, terrifying. Part of its terror lay in an implication of *remoteness*, which appeared to signalize the enormity of its cause, and to emphasize the profundity of the abysm. Heard in that planetary pit beneath a lifeless desert, it astonished—and shocked. Even Bellman, intrepid heretofore, began to succumb to the formless horror that rose up like an emanation from the night.

The noise grew fainter and ceased at length, giving somehow the idea that its maker had gone directly down on the perpendicular wall into nether reaches of the gulf.

"Shall we go back?" inquired Chivers.

"We might as well," assented Bellman without demur. "It would take all eternity to explore this place anyway."

They started to retrace their way along the ledge. All three, with that extra-tactile sense which warns of the approach of hidden danger, were now troubled and alert. Though the gulf had grown silent once more with that withdrawal of the strange noise, they somehow felt that they were not alone. Whence the peril would come, or in what shape, they could not surmise; but they felt an alarm that was almost panic. Tacitly, none of them mentioned it; nor did they discuss the eerie mystery on which they had stumbled in a manner so fortuitous.

Maspic was a little ahead of the others now. They had covered at least half of the distance to the old cavern-channel, when his torch, playing for twenty feet ahead on the path, illumined an array of whitish figures, three abreast, that blocked the way. The flashlights of Bellman and Chivers, coming close behind, brought out with hideous clearness the vanward limbs and faces of the throng, but could not determine its number.

The creatures, who stood perfectly motionless and silent, as if awaiting the earthmen, were generically similar to the Aihais or Martian natives. They seemed, however, to represent an extremely degraded and aberrant type; and the fungus-like pallor of their bodies denoted many ages of underground life. They were smaller too, than full-grown Aihais, being, on the average, about five feet tall. They possessed the enormous open nostrils, the flaring ears, the barrel chests and lanky limbs of the Martians—but all of them were eyeless.

In the faces of some, there were faint, rudimentary slits where the eyes should have been; in the faces of others, there were deep and empty orbits that suggested a removal of the eyeballs.

"Lord! what a ghastly crew!" cried Maspic. "Where do they come from? and what do they want?"

"Can't imagine," said Bellman. "But our situation is somewhat ticklish—unless they are friendly. They must have been hiding on the shelves in the cavern above, when we entered."

Stepping boldly forward, ahead of Maspic, he addressed the creatures in the guttural Aihai tongue, many of whose vocables are scarcely to be articulated by an earthman. Some of the people stirred uneasily, and emitted shrill, cheeping sounds that bore little likeness to the Martian language. It was plain that they could not understand Bellman. Sign-language, by reason of their blindness, would have been equally useless.

Bellman drew his revolver, enjoining the others to follow suit. "We've got to get through them somehow," he said. "And if they won't let us pass without interference —" the click of a cocked hammer served to finish the sentence.

As if the metallic sound had been an awaited signal, the press of blind white beings sprang into sudden motion and surged forward upon the terrestrials. It was like the onset of automatons—an irresistible striding of machines, concerted and methodical, beneath the direction of a hidden power.

Into the Depths

Bellman pulled his trigger, once, twice, thrice, at a pointblank range. It was impossible to miss; but the bullets were futile as pebbles flung at the spate of an onrushing torrent. The eyeless beings did not waver, though two of them began to bleed the yellowish-red fluid that serves the Martians for blood. The foremost of them, unwounded, and moving with diabolical sureness, caught Bellman's arm with long, four-jointed fingers, and jerked the revolver from his grasp before he could press the trigger again.

Curiously enough, the creature did not try to deprive him of his torch, which he now carried in his left hand; and he saw the steely flash of the Colt, as it hurtled down into darkness and space from the hand of the Martian. Then the fungus-white bodies, milling horribly on the narrow road, were all about him, pressing so closely that there was no room for effectual resistance. Chivers and Maspic, after firing a few shots, were also deprived of their weapons, but through an uncanny discrimination, were permitted to retain their flashlights.

The entire episode had been a matter of moments. There was only a brief slackening of the onward motion of the throng, several of whose members had been shot down by Chivers and Maspic and then hurled expeditiously into the gulf by their fellows. The foremost ranks, opening deftly, included the earthmen and forced them to turn backward. Then, tightly caught, in a moving vise of bodies, they were borne resistlessly along. Handicapped by the fear of dropping their torches, they could do nothing against the nightmare torrent. Rushing with dreadful strides on a path that led ever deeper into the abyss, and able to see only the lit backs and members of the creatures before them, they became a part of that eyeless and cryptic army.

Behind them there seemed to be scores of the Martians, driving them on implacably. After awhile, their plight began to paralyze their faculties. It seemed that they moved no longer with human steps, but with the swift

and automatic stalking of the clammy *things* that pressed about them. Thought, volition, even terror, were numbed by the unearthly rhythm of those abysmward-beating feet. Constrained by this, and by a sense of utter unreality, they spoke only at long intervals, and then in monosyllables that appeared to have lost all proper meaning, like the speech of machines. The blind people were wholly silent—there was no sound, except that of a myriad, eternal padding on the stone.

On, on they went. Slowly, tortuously, the road curved inward, as if it were coiled about the interior of a blind and cosmic Babel. The earthmen felt that they must have circled the abyss many times in that terrific spiral; but the distance they had gone, and the actual extent of the stupefying gulf, were inconceivable. Except for their torches, the night was absolute, unchangeable.

Somewhere, as if after the lapse of nocturnal ages, the pitward rushing had ceased. Bellman, Chivers and Maspic felt the pressure of crowded bodies relax; felt that they were standing still, while their brains continued to beat the unhuman measure of that terrible descent.

Reason—and horror—returned to them slowly. Bellman lifted his flashlight, and the circling ray recovered the throng of Martians, many of whom were dispersing in a huge cavern where the road had now ended. Others of the beings remained, however, as if to keep guard over the earthmen. They quivered alertly at Bellman's movements, as if aware of them through an unknown sense.

Close at hand, on the right, the level floor ended abruptly; and stepping to the verge, Bellman saw that the cavern was an open chamber in the perpendicular wall. Far, far below in the blackness, a phosphorescent glimmer played to and fro. A slow, fetid wind blew upon him; and he heard the weird sighing of waters about the sunken cliffs.

He turned giddily away. His companions were examining the cave's interior. It seemed that the place was of artificial origin; for, darting here and there, the torch-beams brought out enormous columnations lined with deeply graven bas-reliefs. Who had carved them or when, were problems no less insoluble than the origin of the cliff-hewn road. Their details were obscene as the visions of madness; they shocked the eye like a violent blow, conveying an extra-human evil, a bottomless malignity.

The place was overpowering, it oppressed the senses, crushed the brain. The very stone was like an embodiment of darkness; and light and vision were ephemeral intruders in this demesne of the blind. Somehow, the earthmen were weighed down by a conviction that escape was impossible. A strange lethargy claimed them. They did not even discuss their situation, but stood listless and silent.

From the filthy gloom, a number of the Martians reappeared. With the same suggestion of controlled automatism that had marked all their actions, they gathered about the men once more, and urged them into the yawning cavern.

● Step by step, the three were borne along in that weird and leprous procession. The obscene columns multiplied, the cave deepened before them with endless vistas. Faintly at first but more strongly as they went on, there came to them an insidious feeling of drowsiness. They rebelled against it, for the drowsiness was somehow dark and evil. It grew heavier upon them—and then they came to the core of the horror.

Between the thick and seemingly topless pillars, the floor ascended in an altar of seven oblique and pyramidal tiers. On the top, there squatted an image of pale metal; a thing no larger than a hare, but monstrous beyond all imagining.

The queer, unnatural drowsiness seemed to increase upon the earthmen as they stared at the image. Behind them, the Martians thronged with a restless forward movement, like worshippers who gather before an idol. Bellman felt a clutching hand on his arm. Turning, he found at his elbow an astounding and wholly unlooked-for apparition. Though pale and filthy as the cave-dwellers, and with gaping orbits in lieu of eyes, the being was, or had formerly been, a man!

He was barefooted, and was clad only in a few rags of khaki that had seemingly rotted away with use and age. His white beard and hair were matted with slime, were full of unmentionable remnants. Once, he had been tall as Bellman; but now he was bowed to the height of the dwarfish Martians, and was dreadfully emaciated. He trembled, and an almost idiotic look of hopelessness and terror was stamped on the wreck of his lineaments.

"My God! who are you?" cried Bellman, shocked into full wakefulness.

For a few moments, the man gibbered unintelligibly, as if he had forgotten the words of human speech, or could no longer articulate them. Then he croaked feebly, with many pauses and incoherent breaks:

"You are earthmen! earthmen! They told me you had been captured . . . even as they captured me . . . I was an archaeologist once . . . My name was Chalmers . . . John Chalmers. It was years ago . . . I don't know how many years. I came into the Chaur to study some of the old ruins. They got me—these creatures of the pit . . . I have been here ever since. There is no escape . . . The Dweller takes care of that."

"But who are these creatures? And what do they want with us?" queried Bellman.

Chalmers seemed to collect his ruined faculties. His voice became clearer and steadier.

"They are a degenerate remnant of the Yorhis, the old Martian race that flourished before the Aihais. Everyone believes them to be extinct. The ruins of some of their cities are still extant in the Chaur. As far as I can learn (I am able to speak their language now) this tribe was driven underground by the dehydration of the Chaur; and they followed the ebbing waters of a sub-Martian lake that lies at the bottom of this gulf.

"They are little more than animals now; and they worship a weird monster that lives in the lake . . . The Dweller . . . the thing that walks on the cliff. The small idol that you see on the altar is an image of that monster. They are about to hold one of their religious ceremonies; and they want you to take part in it. I am to instruct you . . . It will be the beginning of your initiation into the life of the Yorhis."

Bellman and his companions, listening to the strange declaration of Chalmers, felt a mixture of nightmarish revulsion and wonder. The white, eyeless, filthy-bearded face of the creature before them seemed to bear a hint of the same degradation that they saw in the cave-dwelling people. Somehow, the man was hardly human. But,

no doubt, he had broken down through the horror of his long captivity in darkness, amid an alien race.

"What is this ceremony?" said Bellman, after an interval.

"Come, and I'll show you." There was a queer eagerness in Chalmers' broken voice. He plucked at Bellman's sleeve, and began to ascend the pyramid with an ease and sureness of footing that bespoke a long familiarity. Like dreamers in a dream, Bellman, Chivers and Maspic followed him.

The image resembled nothing they had ever seen on the red planet—or elsewhere. It was carven of a strange metal that seemed whiter and softer even than gold, and it represented a humped animal with a smooth and overhanging carapace from beneath which its head and members issued in tortoise fashion. The head was venomously flat, triangular—and eyeless. From the drooping corners of the cruelly slitted mouth, two long proboscides curved upward, hollow and cuplike at the ends. The thing was furnished with a series of short legs, issuing at uniform intervals from under the carapace; and a curious double tail was coiled and braided beneath its crouching body. The feet were round and had the shape of small, inverted goblets.

The Image of the Dweller

● Unclean and bestial as a figment of madness, the idol seemed to drowse on the altar. It troubled the mind with a slow, insidious horror; it assailed the senses with an emanating stupor.

"And this thing really exists?" Bellman seemed to hear his own voice through a creeping film of slumber, as if another than himself had spoken, and had roused him.

"It is the Dweller," mumbled Chalmers. He leaned toward the image, and his outstretched fingers trembled above it in the air, moving to and fro as if he were about to caress the white horror. "The Yorhis made the idol long ago," he went on. "I don't know how it was made . . . And the metal they moulded it from is like nothing else . . . a new element . . . Do as I am doing . . . and you won't mind the darkness so much . . . You won't miss your eyes or need them here. You'll drink the putrid water of the lake, you'll eat the raw slugs, the raw blind-fish and lake-worms, and find them good . . . And you won't know if the Dweller comes and gets you."

Even as he spoke, he began to caress the image, running his hands over the carapace, the flat reptilian head. His blind face took on the dreamy languor of an opium-eater, his voice died to inarticulate murmurs. About him, there was an air of strange subhuman depravity.

Bellman, Chivers and Maspic, watching him in amazement, became aware that the altar swarmed with the white Martians. Several of them crowded forward on the side opposite Chalmers, around the oval summit, and also began to fondle the eidolon, as if in some fantastic ritual of touch. They traced its loathsome outlines with lank fingers, their movements appearing to follow a strictly prescribed order from which none of them deviated. They uttered sounds that were like the cheepings of sleepy bats. Upon their brutal faces a narcotic ecstasy was imprinted.

Completing their bizarre ceremony, the foremost devotees fell back from the image. But Chalmers, with slow and sleepy movements, his head lolling on his tattered bosom, continued to caress it. With a queer mingling of revulsion, curiosity and compulsion, the other earthmen, prompted by the Martians behind them, went nearer and laid their hands on the idol. The whole proceeding was highly mysterious, and somehow revolting, but it seemed wise to follow the custom of their captors.

The thing was cold to the touch, and clammy as if it had lain recently in a bed of slime. But it seemed to live, to throb and swell under their finger-tips.

From it, in heavy, ceaseless waves, there surged an emanation that could be described only as an opiate, magnetism or electricity. It was as if some powerful alkaloid, affecting the nerves through superficial contact, was being given off by the unknown metal. Quickly, irresistibly, Bellman and the others felt a dark vibration course through all their members, clouding their eyes, and filling their blood with slumber.

Musing drowsily, they tried to explain the phenomenon to themselves in terms of terrene science; and then, as the narcotism mounted more and more like an overwhelming drunkenness, they forgot their speculations.

With senses that swam in a strange darkness, they were vaguely aware of the pressure of thronging bodies that displaced them at the altar-summit. Anon, certain of these, recoiling as if satiate with the drug-like effluence, bore them along the oblique tiers to the cavern-floor, together with the limp and sodden Chalmers. Still retaining their torches in nerveless fingers, they saw that the place teemed with the white people, who had gathered for that unholy ceremony. Through blackening blurs of shadow, the men watched them as they seethed up and down on the pyramid like a leprous, living frieze.

Chivers and Maspic, yielding first to the influence, slid to the floor in utter sopor. But Bellman, more resistant, semed to fall and drift through a world of lightless dreams. His sensations were anomalous, unfamiliar to the last degree. Everywhere there was a brooding, *palpable* Power for which he could find no visual image.

In those dreams, by insensible graduations, forgetting the last glimmer of his human self, he somehow identified himself with the eyeless people; he lived and moved as they, in profound caverns, on nighted roads.

Whether he passed from these obscure nightmares into dreamless slumber, he could not know. His awakening was like a continuation of the dreams at first. Then, opening his sodden lids, he saw the shaft of light that lay on the floor from his fallen torch. The light poured against something that he could not recognize in his drugged awareness. Yet it troubled him; and a dawning horror touched his faculties into life.

● By degrees, it came to him that the thing he saw was the half-eaten body of Chalmers. There were rags of rotten cloth on the gnawed members; and though the head was gone, the remaining bones and viscera were those of an earthman.

Bellman rose unsteadily and looked about with eyes that still held a web-like blurring of shadow. Chivers and Maspic lay beside him in heavy stupor; and along the cavern and upon the seven-tiered altar were sprawled the devotees of the image.

His other senses began to awake from their lethargy, and he thought that he heard a noise that was somehow

familiar: a sharp slithering, together with a measured sucking. The sound withdrew among the massy pillars, beyond the sleeping bodies.

A smell of rotten water tinged the air, and he saw that there were many curious rings of wetness on the stone, such as might be made by the rims of inverted cups. Preserving the order of footprints, they led away from the half-devoured body of Chalmers, into the shadows of that outer cave which verged upon the abyss.

In Bellman's mind a mad terror rose and struggled with the spell that still benumbed him. He stooped down above Maspic and Chivers, and shook them roughly in turn, till they opened their eyes and began to protest with drowsy murmurs.

"Get up, damn you," he admonished them. "If we're ever to escape from this hell-hole, now's the time."

By dint of many oaths and much muscular effort, he succeeded in getting his companions to their feet. In their stupor, they did not seem to notice the remnants of that which had been the unfortunate Chalmers. Lurching drunkenly, they followed Bellman among the sprawled Martians, away from the pyramid on which the white eidolon still brooded.

A clouding heaviness hung upon Bellman; but somehow there was a relaxation of the opiate spell. He felt a revival of volition and a great desire to escape from the gulf and from all that dwelt in its darkness. The others, more deeply enslaved by the drowsy power, accepted his leadership and guidance in a numb, brute-like fashion.

He felt sure that he could retrace the route by which they had approached the altar. This, it seemed, was also the course that had been taken by the maker of the ring-like marks of fetid wetness. Wandering on amid the repugnantly carven columns for what seemed an enormous distance, they came at last to the sheer verge, from which they could look down on its ultimate gulf.

Far beneath, on those putrefying waters, the phosphorescence ran in widening circles, as if troubled by the plunge of a heavy body. To the very edge, at their feet, the watery rings were imprinted on the rock.

They turned away. Bellman, shuddering with half-memories of his blind dreams, and the terror of his awakening, found at the cave's corner the beginning of that upward road which skirted the abyss; the road that would take them back to the lost sun.

At his injunction, Maspic and Chivers turned off their flashlights to conserve the batteries. It was doubtful how much longer these would last; and light was their prime necessity. His own torch would serve for the three till it became exhausted.

There was no sound or stirring of life from that cave of lightless sleep where the Martians lay about the narcotizing image. But a fear such as he had never felt in all his adventurings caused Bellman to sicken and turn faint as he listened at its threshold.

The gulf, too, was silent; and the circles of phosphor had ceased to widen on the waters. Yet somehow the silence was a thing that clogged the senses, retarded the limbs. With dragging effort Bellman began the ascent, hauling, cursing and kicking his companions till they responded like drowsy animals.

On and up they toiled, along the monotonous, imperceptibly winding grade where all measure of distance was lost. The night lowered before Bellman's feeble shaft of light; it closed behind like an all-engulfing sea.

The minor urges of hunger, thirst, fatigue, had been trod under by the fear that impelled him. From Maspic and Chivers, very slowly, the clogging stupor lifted, and they too were conscious of a terror vast as the night itself. The blows and kicks of Bellman were no longer needed to drive them on.

Out of that silence, after the lapse of apparent years, a twofold and familiar sound arose and overtook the fugitives: the sound of something that slithered over stone far down in the abyss; the sucking noise of a creature that withdrew its feet as if from a quagmire. Inexplicable, and arousing mad, incongruous ideas, like a sound heard in delirium, it quickened the earthmen's terror into sudden frenzy.

"God! what is it?" breathed Bellman. He seemed to remember sightless things, abhorrent, *palpable* shapes of primal night, that were no legitimate part of human recollections. His dreams, and his nightmare awakening in the cave—the narcotic idol—the half-eaten body of Chalmers—the hints that Chalmers had let drop—the rings of wetness, leading toward the gulf—all returned like the figments of a teeming madness.

● His question was answered only by a continuation of the noise. It seemed to grow louder—to ascend the wall beneath. Maspic and Chivers, snapping on their lights, began to run with frantic leaps; and Bellman, losing his last remnant of control, followed suit.

It was a race with unknown horror. Above the labored beating of their hearts, the measured thudding of their feet, the men still heard that sinister, unaccountable sound. They seemed to race on through leagues of blackness; and yet the noise drew steadily nearer, climbing below them, as if its maker were a thing that walked on the sheer cliff.

Now the sound was appallingly close—and a little ahead. It ceased abruptly. The running lights of Maspic and Chivers, who moved abreast, discovered the crouching thing that filled and rested on a wide shelf above the two-yard path.

Hardened adventurers though they were, the men would have shrieked aloud with hysteria, or would have hurled themselves from the precipice, if the sight had not induced a kind of catalepsy. It was as if the pale idol of the pyramid, swollen to mammoth proportions, and loathsomely *alive*, had come up from the abyss and was squatting above them!

Here, plainly, was the creature that had served as a model for that atrocious image: the creature that Chalmers had called the Dweller. The humped, enormous carapace, vaguely recalling the armor of the glyptodon, shone with a luster as of wet metal.

The eyeless head, alert but somnolent, was thrust forward on a neck that arched obscenely. A dozen or more of short legs, with goblet-shapen feet, protruded slantwise beneath the overhanging shell. The two proboscides, yard-long, with cupped ends, arose from the corners of the cruelly slitted mouth and waved slowly in air toward the earthmen.

The thing, it seemed, was old as that dying planet: an unknown form of primal life that dwelt had always in the caverned waters. Before it, the faculties of the earthmen were drugged by an evil stupor, as if it were composed, in part, of the same opiate mineral as its image.

Bellman, alone, retained a shadow of his senses.

"Come on!" he shouted to the others "Let's make a break!"

Though he pounded and kicked his companions they remained unaware of his presence. They stared in fascination at the Dweller.

Realizing his efforts were fruitless, Bellman determined on a last desperate measure. With a shout, "Come on!" he rushed determinedly past the offensive creature upward toward the entrance that must be ahead. But as he turned a hundred yards away, he saw that the others remained motionless. They stood with their flashlights playing full on the terror; and they could not move nor cry out when it reared suddenly erect, revealing its ridged belly and the queer double tail that slithered and rustled metallically down to the rocky path. Its numerous feet, beheld in this posture, were hollow and chalice-like, and they oozed with mephitic wetness. No doubt they served for suction-pads, enabling it to walk on a perpendicular surface.

Inconceivably swift and sure in all its motions, with short strides on its hindmost legs, levered by the tail, the monster came forward on the two helpless men. Unerringly the two proboscides curved over, and their ends came down on Chivers' eyes as he stood with lifted face. They rested there, covering the entire sockets—for a moment only. Then there was a wild, agonizing scream, as the hollow tips were withdrawn with a sweeping movement lithe and vigorous as the lashing of serpents.

Chivers swayed slowly, nodding his head, and twisting about in half-narcotized pain. Maspic, standing at his side, saw, in a dull and dream-like manner the gaping orbits from which the eyes were gone. It was the last thing that he ever saw. At that instant the monster turned from Chivers, and the terrible cups, dripping with blood and fetor, descended on Maspic's own eyes.

Bellman watched in fascinated horror. He gave a single scream and rushed blindly toward the planet's surface. Only once did he turn.

With blood rilling heavily upon their faces, with the implacable and eyeless Shape at their heels, herding them on, he saw his former companions begin their second descent of the road, that went down forever to a night-bound Avernus.

THE END

In the Winter 1933 Wonder Stories Quarterly

"INTERPLANETARY BRIDGES" by Ludwig Anton.

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On All News Stands—Now 25c

(Illustration by Paul)

One of the Numon was clawing wildly at his body. Beside him lay the remnants of the machine from which a glistening black tide of life was flowing.

WANDERERS OF TIME

By JOHN BEYNON HARRIS

● Many people, discussing the future of the earth, assume without thinking that man will always be the dominant creature. Yet we know that man was once a grovelling, fearful and unimportant animal in the order of nature. There is no good reason why he should not again be relegated to an inferior position among earth's creatures, or disappear entirely from the face of the globe.

If that occurs, what order of life will reign supreme? Or will it come about that there will be a desperate struggle for existence among the remaining species with eventually the extinction of all life—except bacteria?

Mr. Harris has some very definite ideas on this subject, and in this engrossing story he takes us into the future some thousands of years to show us the end of all of our hopes, our ambitions and our scientific and technocratic planning.

● The pompous little man who strutting his way through a wood near the Saber property, blinked rapidly and dropped his lower jaw. For perhaps five seconds he stared before him with an expression of fish-like astonishment, then a fear of the inexplicable, inherited from far-off ancestors, sent him scuttling for cover. Once in the safe obscurity of the bushes, he turned again to goggle amazedly at the center of the glade. His surprise was excusable and his panic understandable.

A moment before, he had faced a small clearing holding in itself nothing more substantial than golden sunlight. Then, even as he looked—he was certain he had neither blinked nor turned his head—a glittering cylinder had appeared. And it stayed there, in the exact middle of the open space, looking like an immense projectile of polished steel. An apparition sudden and alarming enough to make the little man feel entirely justified in running. Now, from his vantage point, he examined it with less panic and a rising indignation.

The cylinder's length he estimated at somewhere about eighteen feet, and its diameter at three feet. The metal covering appeared at this range to be seamless and it scintillated in the afternoon sunshine with a harsh bright-

"Not quite like steel," he corrected himself. "Colder, more like chromium plate. But what the devil is it . . ?"

The discretion of remaining among the bushes appealed to him far more than the valor of a closer inspection. A large object like this, which could appear abruptly and in complete silence before one's very nose, was to be treated with circumspection. Less than half a minute later, he snatched a sudden breath. A rectangular patch of darkness had become visible in the upper surface of the machine—if machine it was.

Fascinatedly, he watched the slit broaden as a panel was slid back. A man's head was thrust cautiously through the opening, turning to left and right as he reconnoitered. Presently, seemingly satisfied that he was unobserved, he slid the panel back to its limit and levered himself out of the opening.

A glance at the man's full face brought a short gasp from the watcher and he moved involuntarily, snapping a branch beneath his foot. For a moment he held his breath, but he became easier when the other showed no sign of having heard the sharp crack. He had turned back to his machine, and with one arm plunged into the dark interior, was fumbling for something. When he straightened again, the other stiffened, for the right hand held a ponderous revolver which pointed in his direction. Any hope that this might be accidental, was quickly dispersed.

"Come on," commanded the man in the glade. "Out of that, quick."

He flourished his weapon impatiently at the watcher's momentary hesitation.

"Put 'em up, and come out," he said.

The man in the bushes waited no longer. Hands well above his head, he marched into the open.

"Who are you?" asked the other.

"Henry Q. Jones," the watcher answered. He was finding himself less afraid of the man before him than he had been of the impersonal cylinder. He even added:

"Who are you, if it comes to that?"

"My name is no business of yours," replied the other, watching him closely, "but it happens to be Roy Saber."

Henry Q. Jones' mouth started to open and then shut quickly.

"You don't believe me?"

Henry Q. grunted non-committally.

"Why not?"

"Well, if you must know, for one thing Roy Saber is younger than you are—though you're mighty like him—and, another thing, I happened to see Roy Saber board the Chicago train a couple of hours ago."

"Awkward," commented the other. "Nevertheless, I am Roy Saber." He contemplated his captive for a moment.

● Henry Q. Jones returned the scrutiny with curiosity. The other's clothes differed greatly from his captive's propriety of dress. His suit was of an unusually bright blue and though the pants were full in cut, the jacket

fitted closely; moreover, though it gave a double-breasted effect, the front flap was in reality carried right across to the left side and secured by a zip fastener. The broad lapel was of a slightly lighter shade of blue and stretched like a triangular slash from the right shoulder to its apex on the left of the waist. The neck opening showed a soft collar with surprisingly long points and a tie striped with the two blues of the suit.

"Well, Henry Q.," he said at length. "I've nothing against you personally except that you are a damned nuisance, but I'll have to tie you up or you might ditch the whole plan."

Roy Saber was inexpert at trussing. He used more rope than necessary and his knots were the jumbles of the amateur, nevertheless he contrived to reduce the other to a state of log-like immobility. Then he produced a handkerchief and carefully began to roll it diagonally.

"I'm sorry, but I can't afford to have you bawling for help.—Open!"

Henry Q.'s mouth remained obstinately shut. He received a painful jab in the ribs.

"Open!"

He opened.

Roy turned back to the cylinder and carefully shut the entrance panel. Then he thrust the big revolver into a pocket, and picked up the bound man. At the edge of the clearing, he laid him down among the concealing bushes.

"I'll only be about a couple of hours," he remarked considerately.

Henry Q. twisted his head and glared balefully after him as he disappeared between the tree trunks.

Roy Saber was back in something under the two hours, and he did not return alone. By his side walked a girl whose fair hair shimmered in the shafts of sunlight which penetrated the foliage. Her face was fresh colored and her chin was rounded, but firm. With her blue eyes and her impertinent nose, none could deny her prettiness, but somehow, her mouth, though not too small, failed to suggest an equable disposition. She looked up at Roy with a slightly puzzled frown.

"But Roy," she said, "you seem to look much older. Your hair's not all black—I'm sure I can see grey streaks here and there. And you're wearing such funny clothes. What's happened?"

"I am older, Betty, but there's no time to explain just now. You must wait a bit."

He looked admiringly at her, so neat and lithe in her close fitting red frock—a deep red, to contrast with her fairness. They paused beside the clump of bushes where he had hidden Henry Q. As he parted the leaves, Betty heard him mutter under his breath.

"What is it?"

Roy did not answer for a moment. He stared thoughtfully at a few tangled cords which were the only evidence of Henry Q.'s late presence. Then he glanced out at the clearing where the cylinder still lay.

"Wait a minute," he directed, and ran off to one side. He was back in less than the minute.

● "It's all right," he said, leading her into the open. "I thought someone might be laying for me behind the machine." He thought for a moment. "I'd meant to talk to you a bit before we risked anything, but this changes it. We'll have to hurry."

"I don't understand—what are you talking about?"

"I'll explain it all later," he said as he hastened her towards the cylinder. He drew the revolver from his pocket and she looked at it askance.

"What——?"

"Later," he said, busily sliding back two panels in the curved surface. He pointed to the end space. "In you get, Betty."

She peered doubtfully at the dark opening. It was possible to see that the whole of the interior was thickly padded and supplied with loose cushions.

"But——"

"Quick, quick," he insisted, lifting her and helping her through the space. He slid the cover over her. Even as it clicked into place he heard a crackle of running feet among the trees and a voice came bellowing across the clearing:

"Stop where you are. Put 'em up."

Henry Q. Jones had evidently returned with reinforcements. With eel-like agility Roy slid into the cylinder; as he did so, two men in uniform burst from the trees and came pelting over the ground, pistols in hand.

"He's got a gun," called Henry Q.'s voice from somewhere behind them.

Roy had a glimpse of one of the policemen taking aim. Like lightning he ducked and slammed the panel over his head. There came a crash as the bullet struck the cylinder somewhere forward of him. He blanched at the thought of the blob of lead in his delicate machinery, but thanked the Lord it had hit the forward compartment and not the rear where Betty lay. In frenzied haste he twisted the dials on his small control panel, and snapped in the minor switches.

The police had reached the cylinder now. They were battering on it with their pistol butts and he could hear their voices raised in a muffled shouting. With a desperate hope that the shot had injured no vital part, Roy wrenched over the main switch.

Outside, two bewildered policemen stared open-mouthed at one another. Even while they hammered on its walls, the cylinder had vanished without trace.

"Well I'll be——," one muttered.

The other said nothing; he looked badly scared. Henry Q. Jones emerged from the safety of the trees.

"And you call yourselves cops," he sneered unpleasantly.

CHAPTER II

Effect of a Bullet

● Roy's biggest surprise when he had made his first journey in the cylindrical machine had been the entire absence of sensation. He had closed the sliding lid and shut out the view of his workroom. Then he had pulled the switch and waited tensely for something to happen. Apparently nothing did, and he had started to reopen the panel with the conviction that the experiment had miscarried and that further adjustment would be necessary.

He had gasped to find that after all the contrivance had worked perfectly—had, in fact, moved him back ten years in time, without changing his position on earth. It was the more surprising in the face of the witnesses' prophecies of utter failure. Sam Hanson, his attorney had protested:

"It's ridiculous, Roy—impossible! Why, if you did go back ten years, you would have to be in two places at one

time—you might even meet yourself. It would mean entire confusion. Just think of the disorganization that success would imply. There'd be neither past nor future any more."

Roy shook his head.

"I shan't meet my younger self—I should remember it now if that meeting had ever occurred. And as for being in two places at one time, well, why not? Has anyone ever proved it impossible? It is just a ridiculous assertion made by persons completely ignorant of the nature of time. Anyway, I'm going to try."

And he had succeeded.

Succeeded not only in traveling, but also in his main purpose which was the finding of Betty. Now he was carrying her home in triumph. He had meant to put the plan before her first, but the intrusion of Henry Q. Jones had upset that. It would be good to see the amazed faces in his workroom when they both climbed out of the machine.

For a second after he had pulled the switch, nothing happened. Then there came a jolt. The cylinder swayed as though poised uncertainly. Further and further over it leaned until it tilted violently over to the right, rolling him up the padded side of his compartment. As it twisted, he wondered what could have happened; after that, he became too busy to speculate. The cylinder was bumping unevenly and turning with increasing speed. Grimly he drove his elbows and knees into the padding in an effort to wedge his body instead of having it bounced around like a ball. The forward end brought up against some obstruction with a crash. The machine slewed violently and the bump with which Roy's head met the end of the compartment was but little softened by the padding.

He thought with anguish of the havoc that crash must have caused amid the mechanism. He stretched one hand up towards the sliding panel. The movement, small as it was, served to upset the precarious balance. Again the cylinder canted over and recommenced its jolting progress, spinning and bouncing like a runaway barrel as it went.

After long drawn minutes, it slowed and rolled jerkily to a stop. Roy moved cautiously to assure himself that, this time, it was stable. It was, but he made a disconcerting discovery.

"Betty," he shouted.

"Yes," her voice came faintly through the partition between their compartments.

"Are you all right?"

The reply was unintelligible.

"We're upside down," he continued, "and I can't open the panel. When I call three, throw yourself against the right side and we may be able to roll on half a turn." He paused, then:

"One—two—three."

The cylinder lurched a little, hovered, and then settled back.

"Try again."

The second attempt met with no more success than the first. Roy wiped his brow; it was getting very warm in the cramped quarters.

"Something in the way," he called. "Better try swinging her from side to side and see if we can roll over it."

They struggled for over a minute, but very little movement was possible. There appeared to be obstructions on both sides, and Roy began to fear that his time traveler would prove a double coffin.

"Once more," he yelled.

Still the cylinder refused to surmount the obstacles. Roy lay back, sweating and exhausted, puzzling to find a way out of the situation. Once he thought he heard a movement outside, but decided that it must be the girl stirring.

"Betty," he shouted again.

As though in answer, there came three deliberate taps on the outer wall.

"Betty, there's somebody outside. Let's try again. One—two—three."

● He threw every ounce of his weight against the side.

Hesitantly the cylinder rolled, this time, until the ports came uppermost. For a second it hung poised, and then came a clank against the side, just in time to stop it from settling back.

Swiftly Roy reached up and slid back his panel to admit a welcome gust of fresh air. Sitting up, he thrust out his head and looked back to see that Betty's panel also was open. Her dishevelled head appeared, but she gazed beyond, rather than at him. He spun round and stared in astonishment at the figure which stood by the battered fore-part of the cylinder. His surprise was reciprocated, and for some seconds, the two faced one another in silence.

Roy felt a shock at the sight of the man before him. He stood barely four feet in height, and his body, hands and feet were in good proportion to that size. But his totally bald head was of normal dimensions—perhaps a trifle larger—and gave an odd effect of being insecurely balanced on his small frame. His visible clothing consisted of a single silvery garment designed on the lines of a smock, but caught around his waist by a broad leather belt to which a number of dangling objects were hooked.

He approached them as they climbed out of the cylinder. Betty shrank back, an expression of disgust on her face. Roy pulled himself together.

"You speak English?" he inquired.

"English is my language," the other replied, his accent differing but little from Roy's own. He continued to regard the two with a puzzled air.

"Then we have you to thank for our rescue—I am Roy Saber, and this lady is Miss Betty Mordan."

"And I," returned the little man, "am Del Two Forty-A."

In the ensuing pause Roy became aware of the unexpected aspect of the countryside. A large red sun was pouring down from the cloudless sky to show, not the fertile land he had left, but a tumbled scene of sand and rock. Nowhere was it relieved by a single soothing patch of green, and over all hung the deathly silence of desolation. They stood in a steep sided valley whose floor was dotted with fallen masses of rock and banked in many parts with drifts of sand. An unhurried river ran twisting past them, disappearing where the curve of the valley cut off their view, a mile away. There was inexpressible dreariness in the barren vista. Roy glanced up at the hillside behind them.

"It's a miracle we weren't smashed in rolling down there," he murmured.

"It certainly is," replied Betty's voice harshly. "And no credit to you, either. Now suppose you get us back—and quick. I'd like to know just what sort of a game you think you're playing with me?"

Roy stared at her and then recovered himself. After all, there was some excuse for her tone.

"Something went wrong," he began, "that cop——"

"Oh, yes. 'Something went wrong' did it? Well, it's your job to see that it darned well goes right again.—Say, do you realize that this is abduction?"

Roy spread his hands helplessly, looking ruefully at his ruined time-traveler.

"I can't make that work again. When the cop fired into the machinery, he jammed something. And now that roll down here's smashed the thing right up."

The dwarf had been peering interestedly into the wreckage of the fore-part, prying among the tangled wiring and examining the remains of shattered vacuum tubes. Still looking perplexed, he turned to Roy again.

"What is your date?" he asked.

Roy suffered another surprise. He had not expected the immediate recognition of his time traveler for what it was.

"I'm from 1951," he replied.

"1941," Betty corrected. "What's wrong with your memory?"

"No, 1951. I'll explain later."

"So early? That is remarkable," said the little man, indicating the cylinder. "My own date is 10,402."

"Say, what is all this about?" Betty demanded.

"It seems to mean that the cop's shot has landed us in the year 10,402."

Betty's regard was scornful and scathing.

"Suppose," she suggested, "you quit the kidding. I'm in no mood for it—what's more, the sooner you get us back home, the better it's going to be for you. Get me?"

● Roy stared at her. Her menacing tone of voice shocked him. He felt bewildered, as though the girl he knew had suddenly turned into a stranger. In his surprise he had forgotten Del who broke in as he turned:

"You are mistaken. I meant to say only that I started from the year 10,402. What this year is, I do not know—save that it is many millennia later."

"That's right," said Betty. "You must keep the joke up. But I'm not laughing—I can't see that you're both so damned funny as you think you are."

A plaintive expression passed over Del's face.

"What does she mean?" he inquired.

Roy changed the subject. Turning to the dwarf:

"Why did you come to this year?" he asked.

Del shook his head. "Something was wrong with my machine—just as something was wrong with yours. It is over there." He pointed to a large boulder some twenty yards away. The end of a bright metal bar protruded from behind it.

"Is it smashed too?"

"Only a little injured."

"Let's go and look at it."

Before they left the cylinder, Roy groped in the control compartment and produced his revolver. He stuffed a handful of cartridges into each side pocket and they moved off. Betty followed sulkily.

Del's machine bore no resemblance to his own. The impression it gave was of a cubical cage with six foot sides and built of an intricate criss-cross strutting of two metals, one silvery, and the other, black. A padded bucket seat was set in the middle with a small control board before it. The driving mechanism was evidently contained in three black boxes clamped to the base framework and inter-connected by heavy cables. Roy's heart sank as he saw it. An idea that parts of his own cylinder might be used to render Del's machine workable, was roughly quashed. The two contrivances had nothing constructionally in common.

Del mutely pointed to one base corner where the framework was wrenched and sadly twisted. It was also noticeable that the cover of one of the black boxes was split open. Roy leaned over to examine the damage more closely.

"You see," Del began, "unlike your machine, this works by the capillary absorption of light. The rays striking—"

"Look, look!" cried Betty, behind them. They wheeled to find her pointing up at the skyline of the opposite hill. A row of strange objects was progressing in single file. There was nothing to give them scale, and Roy was able to estimate their height only very roughly in the neighborhood of twenty feet. Each consisted of an egg-shaped main bulk balanced upon two trellised supports, tapering towards the ground. These "legs" were jointed in the middle, and, like the "body" above, were colored a bright red. Around the main upper bulk, complexities of levers were folded.

For some seconds, the three stood motionless and staring.

"What——?" Roy began, but Del shook his head before the question was formed. There had been nothing like these in his century.

From the leader of the five red contrivances a jointed arm suddenly swept to the ground and caught up a rock. Without pausing in its stride, it sent the mass, fully half a ton in weight, sailing across the valley. Somewhere on the hill behind them it landed with a crash and a clatter of metal. Roy abruptly dragged his companions into the shadow of the nearest bolder, fearful that discovery might bring a rock hurtling in their direction.

The red machines strode on their way with unhurried, stilted gait, a faint metallic clanking accompanying their movements. Apparently the rock had accomplished its purpose—whatever that might be—at any rate, no more followed, and the metal arm was refolded against the egg-shaped body-piece. The three watched in silence as the five red figures carried themselves away in long, stiff strides. Even Betty's indignation had momentarily given way to nervousness.

"What were they?" she demanded.

Roy shrugged his shoulders. Speculation was worse than useless. He stood up to assure himself that the machines were truly out of sight. As he rose, there came a clatter of metal against stone, a sound rapidly approaching up the valley. His hand snatched at his revolver.

CHAPTER III

The Machines

● A group of machines came abruptly round the masking turn of the valley. Contrary to Roy's expectations, they bore little similarity to the rock-hurling monsters of the hill-top. Only the shape of the body pieces was similar. They stood some seven feet to the highest point of the rounded back, and their egg-shaped hulls progressed with a scurrying motion upon six jointed legs. Four waving metal tentacles protruded from the extreme front and, above them, two lenses were set flush in the smooth casework.

They stopped at the sight of Roy, with the suddenness of complete surprise, and stood motionless save for their waving tentacles. He called in a low tone to the others to remain hidden and stepped forward, revolver in hand. An indecisive movement ran through the ranks of the machines. They seemed on the point of retreat, but at that moment, Betty, ignoring Roy's advice, chose to emerge from behind the rock.

The machines moved as one, and came scuttering forward with a great waving of tentacles. Three shots from Roy's revolver crashed among them with no visible result. He turned to become aware that Del was now out of concealment, fumbling with a tube which looked like a flashlight.

"Run," Roy snapped. "Get to the river."

He had some faint hope that the machines might not be watertight. Betty was already fleeing and Del turned to follow her. Roy stayed long enough to send another three shots, and then started to run with the machines almost upon him. He made no more than a dozen yards before something fouled his ankle and flung him heavily to earth. As the machines overtook him, he saw Del turn and raise his tube. Two tentacles of the nearest pursuer fell to the ground as though they had been chopped off. Dell switched the tube at another, but now there were a half dozen of the machines bearing down on him.

One more tentacle fell, then, like a silver whiplash, another struck the tube from his hand and wrapped itself around him. The tube sailed high through the air and fell with a splash into the river. A fountain of steam, like the jetting plume of a geyser, roared into the sky, while the water all around broke, seething and bubbling. Betty, almost at the brink, recoiled. The feeler of a pursuing machine snatched at her, tearing away her red frock. It tossed the garment away, wrapped like a shining belt about her waist, and carried her back towards Roy and Del.

With relief Roy saw that no injury seemed intended towards any of the party. Each of them was carefully picked up in a wrapping of tentacles, and the machines set off down the valley in the direction from which they had appeared.

For five miles they followed the tortuous river course, then the hills were left behind and they came out upon a level plain where patches of coarse grass, half choked by drifting sand, struggled hardily to grow. The machines changed their formation as they reached the open country and Roy found that Del's captor was traveling alongside his own, while Betty's was some yards in advance. He spoke across to Del and received assurance that he was uninjured.

"The most unfortunate thing is that my tube is lost," the dwarf added.

"What was it? I've never seen anything like that before."

"A heat ray. You did not have such things in the twentieth century?"

Roy shook his head and went on to talk about their captors. On this subject, both were equally at a loss.

"Robots? Distant control mechanisms? They might be either," Del suggested.

"Or, perhaps, vehicles," added Roy. "The bodies of the race may have atrophied into complete uselessness and made these machines necessary for carrying the brains."

Del considered the theory an unlikely one.

"But they certainly have a high level of intelligence. No doubt you noticed that they are bringing along our wrecked machines?"

● Roy, glancing back past the curving metal flank of his captor, could see his battered cylinder supported by the tentacles of two following machines.

Betty had caught the sound of their voices. She called back querulously to know why Roy did not do something. The indignity of capture had done nothing to soothe her temper and, now that no immediate danger threatened, her tone had resumed its nagging quality. After a devastating flow of abuse, Del inquired curiously:

"Is she hurt?"

"Yes, she's hurt, but not in the way you mean. She's been pinked in her pride. She was riled to begin with. Now she's lost her dress and is being carried over a desert in her underclothes—she's hurt, all right."

Del looked surprised at Roy's tone. He was silent for some moments before he suggested:

"I wonder whether that red dress had anything to do with the attack? It was at her appearance that the machines went into action, and when the dress was torn away, they became much calmer. Also, the first machines we saw were colored red. . . ."

No reply came from Roy. He seemed uninterested in the suggestion. Del relapsed into a contemplative silence.

During their advance the country was losing severity. The hard, wiry grass gradually became supplanted by a softer type, growing more luxuriantly and almost hiding the sandy soil. A dotting of infrequent, stunted shrubs managed to find sustenance. In the distance a line of darker green suggested the presence of trees.

"Thank God for that," Roy said. "I had begun to fear that the world might be all desert."

"I think we're headed for that," said Del. He nodded ahead towards a vast spike which stabbed up into the heavens.

Roy looked at it. The base was hidden among the trees many miles away, but even at this distance he could tell that its height must be measured in thousands of feet. Observation at such a distance gave no clue to its nature save that it was too isolated and too abrupt to be a natural formation. Yet it was roughly shaped, lacking the symmetry and lines of a normal artificial structure. Its vastness induced a sense of importance and a feeling of fatalism, and he watched it with rising disquiet until the great red sun died in a livid blaze.

The machines did not hesitate. They held on their way through a mysterious dark world in which the only sound was the scuttering of their own progress.

Throughout the night they pursued a winding way among the trees, still bearing in the direction of the mighty spire. The darkness appeared to have little or no hampering effect upon the machines, and dawn found them with but few miles left to cover. It was with a very weary thankfulness that the captives were carried clear of the forest into the open space surrounding the base of the artificial mountain. They were not only fatigued, but hungry and thirsty, and oppressed by the impossibility of making their wants known.

The mass of the building at short range was stupendous and overwhelming, rearing before them like an ill smoothed cliff and dwarfing them into a feeling of helplessness. One high, arched entrance pierced it at ground

level, and through this they were borne into ever increasing gloom.

For five minutes they traveled through pitch black corridors filled with the scuttering sounds of many mobile machines; then their captors came to a stop for the first time since they had left the rocky valley. There came a click, followed by a rattle as a door of sheet metal slid up into the roof. Beyond it was revealed a dimly lit, cave-like hall. The binding tentacles loosened to set the three on their feet. Gentle thrusts sent them staggering stiffly forward. The metal door clattered down behind them.

● For a moment they stood silently gazing about them. The meager light emanated from a group of translucent balls placed in the middle of the floor and served to show imperfectly the rear end of the hall. Of the other end, beyond the lights, nothing could be seen but a velvety darkness. Roy took a step forward and then stopped abruptly at the sound of something moving in the shadows. He drew his revolver and pointed it menacingly as he continued his advance. Two figures came dimly into view, rounding the clustered light balls.

"Stop," Roy ordered.

He turned to speak to Del, but the little man brushed him aside and rushed excitedly forward, calling to the two figures. Roy, with Betty beside him, was left to look on wonderingly as the three greeted one another. He could see now that the strangers were similar to Del both in stature and clothing. A few moments later they were led up and introduced. They regarded Roy and Betty with the same curiosity as Del had shown at the first meeting, and evinced the same incredulous surprise at hearing of their twentieth century origin. Del explained:

"These are my friends Kal Two Eleven A and Ril Three Thirty-Two A. They were both of them my assistants," he added.

Roy's wonderment grew.

"Then you are also from 10,402?" he asked.

The dwarfed Kal shook his large head.

"No, we are from 10,424. It took us over twenty years to duplicate the time traveling machine."

"But you know what date we have reached now?"

Again Kal shook his head.

"We have no more means of discovering than you have. One can only guess——"

The clatter of the metal door cut short his speculation. The group spun round to see three more human beings urged gently into the hall. There was a fleeting look of alarm on the face of the tallest of the newcomers. As the sheet rattled down behind them, he produced a black tube and advanced, holding it trained upon them.

"Who are you?" he demanded in a firm tone. "And by what right have you made us prisoners?"

Roy looked the man over. He stood perhaps six feet and was built with slender strength, in excellent proportions. His hair, though fine and sparse, was jet black as were the eyebrows which ran in a single frowning bar across his forehead. His jaw was square, his mouth, thin-lipped and firm and his eyes, keen. The strength of character which he showed seemed out of accord with the soft silk (or synthetic silk) garments which clung in lustrous folds to his knees. One of his companions was similarly clad. The third newcomer hung back; little more than a shadow in the dim light.

"Who are you, I say?" repeated the speaker.

It was Del who answered. He gave particulars of his own group and countered with a like request. The new arrival put away his tube.

"I am Hale Lorrence, and this is my companion," he indicated the other silk robed man. "We have come from the year 3920."

"And the third member of your party?"

The man who called himself Hale, shrugged his shoulders.

"She has told me that her name is Jessica Tree. She claims to have started from 2200 A. D."

The vaguely seen figure stepped forward. She revealed herself as a girl of perhaps twenty-four or twenty-five. A russet tunic, heavily worked with metallic thread, covered her to her knees. Her legs were a sunburnt brown and her feet were encased in shoes to match her tunic. Black hair, cut short, clustered about her softly oval face, and she surveyed the company from a pair of lustrously dark eyes. Her tone as she spoke betrayed her dislike of Hale's manner.

"It is more than a mere claim," she said coldly. "It is a fact that I come from 2200. . . . What year is this?"

Del shrugged his shoulders.

"That is what we all want to know."

"I don't," cried Betty's voice, viciously. "I don't care a damn what year it is. The one thing I'm certain about is that I have been kidnapped. And if somebody doesn't do something to get me back where I belong—and do it darned quick, there's going to be trouble around here. See?"

Hale Lorrence regarded her speculatively for a moment and then turned to Del.

"We are hungry and thirsty. Is there any food here?"

Kal had ascertained that there were dishes of water up the other end of the cavern, but no food.

CHAPTER IV

Adrift In Time

● After they had drunk, Roy started on an exploratory tour of their prison. He could discover no opening other than that closed by the metal door. The walls would have easily revealed any crack for they were smooth and unornamented. The finish to them puzzled him not a little. Although they were hard and smooth, the effect was not that obtained by any mechanical finishing process. It was, he felt, the kind of result one would expect if a giant hand had attempted to shape the material in its plastic state without the use of tools.

The end of the circuit found him no wiser than the beginning. He returned to find the rest of the party endeavoring to clear away some of their mystification. Del was saying:

". . . .therefore, this must be a kind of dead spot in time. It is as though our machines had been thrown into the flow of time and swept along until, for some unguessable reason, they met an obstruction at this point. Every one of us has arrived here because his machine was faulty in some way or other. To take an illustration—a bad one, I admit, but enough for our purpose—one may consider time as a river. You may turn boats adrift on it at many points, and they will all collect together at the same serious obstacle whether they have traveled a hundred miles or two miles. We are now at some period where the

straight flow of time has been checked—perhaps it is even turning back upon itself. We know no details at present, but it is certain that the same curious phenomenon has thrown us all together."

"But," Hale objected, "time, like space, surely is curved?"

"It may be—in fact, it must be, but I see no reason why there should not be interruptions in time—after all, are not the stars interruptions in space?"

"You mean that space may interrupt time in the same way that time distorts space?"

"Roughly, yes,—if you can consider the two apart, which I find impossible. I merely repeat that we have struck some barrier and been thrown up like so much jetsam."

"Then there may be others, besides ourselves?"

"As many others as made faulty time travelers."

Julian Tyne joined in the conversation. He spoke with a lazy drawl which irritated his listeners.

"But what is all this?" He waved a languid arm. "This place, these queer machines—both the tall red things and the smaller white ones which caught us—what are they all doing? It doesn't seem to make any sense."

Del glanced at him.

"Suppose an alien form was plunged into your world of 3920," he said. "How much do you suppose he would understand? I doubt whether it would 'make sense' to him. In fact, I would go so far as to suggest that you would have very little understanding of the organization of my world of 10,402, had your machine taken you there instead of here."

Roy broke in, dragging the conversation back to the main issue:

"But what do you think these machines are? Slaves of greater intelligences—robots? Or have the machines indeed beaten men as Samuel Butler, at the end of the nineteenth century, feared that they might?"

"I don't yet pretend to be able to offer any explanation," Del replied, shaking his head, "but of one thing I am certain, and that is that they are not robots. You notice, for instance, the irregular finish of this building, both inside and outside. Indisputably, if it had been built by machines, the construction would be mathematically exact. I am convinced that somewhere back of all this we shall find a biologically developed intelligence."

"And it is up to us," remarked Hale, "to see that whoever, or whatever, it is, doesn't get things all his own way. What weapons have we?"

He and Julian Tyne produced black tubes which Del and his companions examined with some amusement. Julian appeared nettled:

"What have you?" he asked.

Kal and Ril showed tubes similar to that which Del had lost in the river. They had come prepared with two each.

"Ten times as powerful as yours," Del explained, "and for all practical purposes, inexhaustible."

Roy's revolver was inspected with much the same mirthful contempt as a catapult would have received. Del made an inventory:

"Four high-power heat tubes; two low-power tubes; one solid bullet projector. Not too bad an armory, though I am sorry that my own heat ray was lost."

● The clang of the metal door roused the whole party from sleep—though how long they had slept, they could not tell. Roy sprang suddenly to a sitting position. He could see by the dim glow that a number of white metal machines were scuttering towards them. Hale was fumbling for his ray tube.

"No," said Del's voice. "Your tube has not enough power to hurt them—besides, we are trapped. They may intend no harm."

The machines advanced with tentacles extended. Roy felt one wrap firmly around his waist and lift him again into the air. It was in his mind to show fight, but Del had advised against it, and he was coming to have a respect for the dwarf's judgment. The rest of the party quietly submitted to like treatment and were carried towards the still open door.

For a time they passed through corridors in utter blackness. Again they were aware of movement all around them. The clicking and scraping of invisible machines, orderly and unhurried, as they passed to and fro. At last an arch of daylight showed wanly and minutely ahead. Roy breathed a sigh of relief at the prospect of leaving the oppressive gloom of their strange prison. He was to be disappointed. Forty yards from the passage mouth, the machines stopped, and it was light enough for him to see one of them plunge a feeler into a hole in the wall. There came a familiar clatter as a metal door slid up.

The hall which they now entered was far larger than their former prison and was lit by the soft, white rays of more than a dozen of the luminous globes. The machines evidently had sufficient knowledge of their prisoners to realize that light was necessary. A surprised exclamation broke from Del. The others, following the line of his pointing finger, observed a row of mechanisms arranged down one wall.

"Our time travelers," Hale exclaimed.

Roy identified the remains of his cylinder and Del's damaged cage, but was puzzled to see that there were more than a dozen other queer shaped constructions in company with them.

Without a pause they were carried on towards a large machine which occupied the center of the room. Like their bearers, its body case was ovoid in shape, but, unlike them, it possessed no legs and stood half as high again. Save for a pair of lenses and a bunch of metallic tentacles, it lay like a monstrous egg with a gleaming shell. The prisoners were drawn into a line before it, and the bearers scuttled away, closing the door behind them.

"Well," said Roy, "what do you suppose is the next move?"

Dell was staring at the machine. Its tentacles were flourishing back and forth, weaving intricate patterns in the air.

A hand suddenly grasped Roy's arm. He looked at Jessica Tree standing beside him.

"What is it——?" he began.

She only pointed. Three shambling figures had emerged from behind the central machine. Roy looked at them amazedly as they came forward to join the party. All three stood well over six feet, superbly muscled and completely naked. Their heads were small and seemed even smaller above their magnificent chests and the broad spread of their shoulders. A look of bewilderment in their eyes gave way, as they caught sight of Kal and Ril, to relief, mingled with a piteous gladness.

All three bowed before the two dwarfs in a trustfully submissive manner, and the latter, after momentary confusion, acknowledged the salute by raising their arms in some ancient greeting. The three newcomers slouched back a few steps and stood waiting while Kal and Ril hurriedly conferred.

"Tak Four A?" Kal suggested cryptically.

"Undoubtedly, but this must have taken many centuries," answered Ril.

"What are they?" Roy was still regarding the unclassifiable men. Kal offered explanation.

"I imagine they are the result of Tak Four A's artificial selection. He held that we were becoming too atrophied physically—you see we are dwarfs, compared with you—and he decided that a more muscular race, which he proposed to call 'Numen' must be created. It looks as if he had been extremely successful."

"Then these are the masters of the world now?"

"I don't think so. They seem more confused and surprised than we are."

● He turned and spoke clearly and carefully to one of the tall creatures. For a moment the other looked puzzled, then a light of intelligence came into his eyes. He spoke excitedly and jabbed with a finger in the direction of the derelict time travelers by the wall.

"So they are in the same jam with us," mused Roy. "But surely they could not have built——?"

"Certainly they could not," Kal agreed. "At a rough guess I should say that they were taught to work the thing and sent on an experimental trip by an inventor who valued his own life."

Jessica, her first fright abated, looked at them with understanding.

"Poor things," she murmured. "For all their size they're scared to death—frightened like lost children."

Del's voice suddenly brought their attention back to the central machine.

"The thing is trying to communicate with us, but we'll never be able to make anything of all that waving of feelers."

The whole party stared blankly at the writhing tentacles, flashing in meaningless gestures. Abruptly, as though realizing that this form of signalling was making no progress, all the feelers, save one, withdrew and coiled up. The one still extended dropped to the floor and began to scratch a series of queer characters on the earthen surface.

It stopped. The feeler pointed first to them and then to the marks it had made. Del stepped forward and inspected the scratchings more closely. He shook his head. The machine grasped the meaning of the gesture. It smoothed the ground and began again. The characters it produced on the second attempt were undeniably different forms from the first, but were no more intelligible.

Patience was evidently the machine's long suit. Four times it had repeated the smoothing and scratching before they craned over to stare at its moving tentacle in excited silence.

"M," it wrote.

"M—E—N?"

Del dropped to his knees. Swiftly he traced a large "YES," in the dirt.

"HOW?" it asked after an interval.

Del pointed to the time traveling machines and ran across the room to indicate the broken part of his own. The machine understood his meaning and its feeler fell to scratching what proved to be the beginning of a tedious written conversation.

"For the Lord's sake," said Roy, sometime later, "tell it to give us some food—we're all in pretty bad need of it."

The door opened a few minutes later in response to some unknown method of communication, and a machine scuttled in bearing circular objects a foot in diameter and three inches thick. Roy picked one up, examined it, and then knocked it experimentally with his knuckles. It gave an unmistakable sound.

"Wood," he said disgustedly, "what the dickens does it think we are? Try it again, Del. Say 'fruit' or something like that."

Some hours later, feeling very much better for the fruit which had been produced in generous quantities, Roy sat beside Jessica and watched the three dwarfs hard at work on one of the time travelers. The damage to Del's machine had been less serious than he had feared. Such parts as had been ruined could be supplied from the duplicate contrivance in which Kal and Ril had traveled. A couple of hours' toil saw the replacements almost completed.

"Not that it's going to help us any," said Betty, complainingly. "You couldn't get more than four into that cage affair, even at a pinch."

Del had agreed.

"But this"—he pointed to the tentacled machine—"is intelligent. Maybe it can duplicate it for us from a pattern."

"That's good," Betty sneered. "I suppose you're trying to kid me that you're not going to slip off in that traveler and leave us here?"

"We have no intention of doing such a thing."

● Betty shrugged her shoulders and moved away. She favored Roy with a contemptuous glance as she passed him, and made her way to the side of the moody Hale Lorrence. It was noticeable that a few minutes later much of his moodiness had evaporated and the two were deeply engaged in a whispered conversation.

Jessica was puzzled by the relationship between Roy and Betty.

"But I don't understand why you brought her," she said. "You're not in love with her."

Roy agreed with a slow nod.

"No, I'm not in love with her—not now. But in 1941, I was. She disappeared that year, and for ten years afterwards I devoted myself to building a time traveler so that I might find her again. I can see now that for all that time I was idealizing her. By 1951 I was no longer in love with Betty, but with an ideal girl of my own imagining—a Betty, I had built it up in my own mind. You understand?"

"I understand. So when you went back to the real Betty. . . ?"

"It was to fetch her from 1941 to 1951. On the return trip the machine let me down. And," he added in a voice so low that she could scarcely hear it, "I'm glad it did."

He paused a moment before he added:

"Tell me, how did you get here—and alone?"

"There's very little to tell. It happened entirely by accident. I had been helping my father to build the machine—perhaps helping is rather a grand word for the

little part I took, but he had no other assistant. My part of the work was far more practical than theoretical.

"I was very hazy as to the principles of the machine, but I was frequently called upon to make tests of the wiring and the connections. Yesterday—thousands of years ago it is now—I was testing some switches in the traveler. My father must have made the main battery connections and forgotten to warn me. The next thing I knew was that the laboratory had disappeared and there was a sandy plain all around me.

"I realized almost at once what had happened and I worked the levers desperately. Nothing responded. I got out of the machine with an idea of going to find help. Then a red thing came marching over the plain. I was frightened so I hid as best I could. The thing came up without noticing me. It lifted up the traveler and threw it down on one side, breaking it badly. Then it went on and I think I lost my head for a time, for I knew I could never mend the machine. I never remember crying in my life before, but I felt so terribly desolate and alone. A little later the white machines came along and found me."

"Well, you've got company now, at any rate," said Roy. "And I don't think there is any need to be sad. Del will get us back somehow. I've a great faith in that little chap—queer as he looks."

Hale Lorrence and Betty rose to their feet and began to saunter in the direction of Del and his fellow workers. After some moments' close examination of the cage, Hale said:

"Your machine is on a slightly different plan from mine. Will you explain it?"

Del indicated the controls and settings while his assistants put finishing touches to the repairs. Betty climbed into the traveler and began fingering the switches. Roy stopped talking to Jessica and watched. There was a furtiveness about the pair that he did not like. Hale seemed to be edging round as though he wanted to gain a coveted position. Kal looked up and proclaimed that the work was finished. Immediately a gleam came into Hale's eyes.

"Look out," Roy shouted. But he was too late.

Like a flash Hale snatched a high power heat ray from Kal's belt.

"Back," he roared, pointing it at them. "Back, all of you."

There was no disobeying the command. Kal and Ril drew ray tubes, but both hesitated to use them—the precious time traveler stood right behind Hale. As they looked away, the egg-shaped metal creature in the middle of the room stirred its limbs as though realizing what was afoot. One metal tentacle came snaking across the floor towards Hale. Without hesitation, he pressed the catch of his tube and lopped the shining limb away. Another came shooting in his direction, and it too, fell to the ground. He turned and sent a savage jet of heat searing full at the metal body. He swung back glaring at the group of men. It seemed for a moment that he was minded to end their existences with a final sweep of the heat beam.

Roy's revolver came into action with a crash. The heavy bullet took Hale in the arm. The tube dropped from his hand and he bolted into the machine. Roy, as he took aim again, saw the other unwounded hand reach for the switch. Once more his revolver spurted, but the bullet flattened itself against the wall.

The time traveler, and with it, Hale and Betty, had vanished.

CHAPTER V
The Masters of the Machines

● An inarticulate cry, something between a moan and a scream, brought them facing to the center of the room. One of the "Numen" was clawing wildly at his body and emitting animal-like howls. Behind him lay the remains of the machine, split by Hale's ray stroke into two parts. From it a glistening, black tide of life was flowing in their direction. The unfortunate "Numan" had stood nearest, and already the black flow covered him thickly. Even as they watched in unmoving amazement, he fell writhing to the ground and his body became a mere mound in the blackness.

"Ants," cried Roy as the black horde advanced. "Millions of ants."

The affrighted group backed up the hall, the two surviving "Numen" gibbering the while with fear. Del caught up the tube which Hale had dropped.

"Low power," he ordered. "Ray them all."

There was little need for the command. Kal and Ril were already playing their tubes back and forth across the advancing line, withering the insects by thousands. Julian Tyne, shaken into activity, first by the desertion of his friend and then by the threatening menace, joined in, sweeping his own ray with telling effect.

At every pass they made, thousands of ants shrivelled and became no more than light ash; but still they pushed relentlessly on, marching blindly to certain death. Their centralization had disappeared with the wrecking of their machine and now they were left only with the old instinct to attack. There was little real danger, even Julian's lesser ray could have wiped them all out in five minutes—but there came an interruption. The familiar clatter of the metal door. Del turned to see a trio of machines scuttering in through the opening. He pushed up his ray to full power and cut away the fast-moving legs with one sweep. The metal bodies dropped and impeded those behind.

Del switched a withering blast of heat on the lintel of the doorway. More by luck than knowledge he succeeded in melting away the supporting catches and the metal sheet crashed down, bisecting two entering machines as it fell. Kal sprang to Del's side and trained a ray on one of the stranded machines, turning it incandescent; but already from the broken halves in the doorway more black streams of insects were flooding to the attack. Switching his ray to low power lest he should melt the door behind, Del swept a myriad of infuriated ants into eternity. Julian and Ril, behind him, continued the destruction of the first swarm.

Kal dealt rapidly with all three of the powerless machines. Each was rendered red hot, and its crew incinerated before it could escape. Then he joined Del in repelling the second attack.

There came a pandemonium of battering against the door as the machines outside attempted to crash their way in, but the metal sheet was massive enough to defy their most strenuous efforts.

The slaughter of the ants was quickly completed. The four tube holders rayed, on low power, every corner of the great hall to make certain that none had escaped. Only when they were satisfied that the last ant was wiped out

did they have opportunity to pause and consider.

"We'll have to get out of this—and get out quick!" exclaimed Roy.

"But how? There's no way but the door."

"Burn our way out," replied Del. "We're not far from the open here. You remember we were near the entrance when they turned in here. Which direction was it?"

"The left wall," said Roy, definitely. "But we can't burn through that—all the molten stuff will run back on us in here."

Del shook his head. "We can get rid of that."

A heat ray was rigged up, pointing directly down at the floor, and then switched on to full power. For ten or twelve seconds the circle of earth below it boiled and seethed furiously while waves of heat rolled through the cavern. Then, abruptly, it vanished leaving only a dark hole. Roy stared.

"What happened?" he inquired.

Del, switching off the tube, smiled at his astonishment.

"There's no magic about it," he assured him. "You see, this place we are in is nothing more nor less than a mammoth ant-hill. But ant-hills have workings extending below ground as well as above. We simply melted through the roof of the level below us and the residue has flowed through the passages down there."

● Approaching as closely as possible, Del began to cut a trench from the foot of the wall to the lip of the newly drilled hole. His back was towards the door, and it was only a warning scream from Jessica which saved him from the fate of the "Numan." All looked where she pointed. A black carpet of ants was spreading towards them—streaming between the base of the door and the ill-fitting threshold in their hundreds of thousands.

Del turned like a flash and his tube, still at full power, swept them to instant annihilation. Simultaneously a corner of the door became a ragged hole in the metal, its edges dripping molten blobs to the floor. Del set Julian to guard the vulnerable spot and turned with renewed energy to the drilling of the escape tunnel.

Muffled as much as possible against the heat, he stood back on the far side and trained his ray forward. The solid wall began to liquefy. It oozed and dripped down into the trench he had prepared, flowing along until it poured to unknown depths through the hole in the floor. The operation took no more than a few minutes, but the belching waves of heat reduced them in even so short a time to the limit of their endurance. The hot air of the cavern became all but unbreathable. The radiation seemed to scorch them even through their clothing when, to Del's surprise, daylight broke through at ten to a dozen yards distance.

"We've been fortunate," he remarked, shutting off his tube. "We were nearer the outside than I suspected. I've drilled the shaft on a slant so that it will drain. But it will be some hours before it is passable. Now we must get to work—when we've made that doorway safe."

Narrowing his beam, he cut an overhanging piece of the roof so that it fell squarely in front of the hole in the door. Satisfied that the entrance was now completely blocked, he turned his attention to the row of derelict time travelers.

"These," he said, with a wave of his hand, "are the only means we have of regaining our own time. We cannot take them bodily with us. But we must select the more intricate and essential parts and carry them off. We may be able to discover material for framework, but such things as vacuum tubes, Lestrange batteries, light-impulse cells and the like, would be a great labor to construct—even if we could do so, which is doubtful."

Very little of Roy's machine was worthy of salvage. When he had extracted his two undamaged Lestrange batteries, he walked over to the two "Numen" who were standing helplessly by their crumpled vehicle and directed them to unbolt such impulse cells as remained intact. Then he became interested in the other machines. Amongst those unclaimed by anyone present stood two dented metal cubes. Del came over to join him as he pulled on the door of one. It came grudgingly ajar, hanging askew on the twisted frame. A breath of corruption sent the two men staggering back a pace. Holding his breath, Roy reapproached and peered inside. The shrivelled body of a man, in a far state of decomposition, lay huddled into one of the further corners.

"Poor devil," he muttered, "at least we've been luckier than he was."

Del, with his tube at low power, cremated the decaying body and after waiting a moment for the air to clear they both entered. One wall was lined with rows of tubes and resistances, while on another were control panels attended with tortuous convolutions of wiring. Roy peered hopefully among the serried switches and dials for some clue to the machine's date of origin, but without success. Del pondered silently over the mechanism for a while. An expression of wonder came over his face.

"What is it?"

Del answered half to himself.

"I considered it impossible."

"What do you mean?"

"This vehicle is radically different from ours. It does not plunge instantaneously through the time flow. Instead, it has the property of slowing down its contents so that the world outside slips by at high speed by comparison. A slow, inefficient machine—but it worked."

"I don't understand."

"I mean that both our machines—yours and mine—work similarly to the extent that they insulate us entirely from time—that is to say ages pass by us in a flash and we are not affected. But this is not a complete insulating machine; it works with a kind of drag action.

"For instance, if the operator turns this main dial to indicate a speed half way between the normal time flow, and complete insulation, events inside his chamber will take exactly twice as long to happen as they would in the outer world. During the period which seems an hour to him, the events of two hours will take place outside. If he turns the dial further, the events of a week, or a year, flash past in what appears to be an hour. See, he even has a window through which he can watch the happenings of the world fly past."

● Roy noticed a square of glass set in one wall.

"I think I understand. But what happened?"

"He must have made a mistake somewhere, just as we did, but, unlike us, he was traveling so slowly, even at his top speed, that before he reached this date, he starved and died on the way—another martyr to experiment. It's a pretty safe guess that we shall find that the same fate overtook the man in the other cube."

Kal came over to summon Del with the information that

the salvaged parts had been laid out, awaiting his decision as to which should be taken and which left. Under his direction the selected fragments were divided among the party for portage. A further inspection of the passage revealed that it was still too hot for use. They must wait at least another hour. Del looked worried and examined the joints of floors and walls carefully for any traces of the ants breaking through.

"Ants," said Roy musingly as they waited. "Insects working those machines—ruling the world, perhaps—it's incredible."

"It's logical," Del contradicted.

"I don't get that."

"It was inevitable sooner or later. They've always had a far better organization than man, even in my century—no wasted effort, no need to struggle continually with subversive factors. The only thing which stopped them being masters of the world, from the beginning, was their size. Now they have found a way of overcoming that disability. There's a natural limit to the size of insects."

"Why not?"

"Oxygen. They do not breath as we do, but absorb the oxygen through the surface. If they became large, there would not be enough absorption area in proportion to the bulk inside. They would just die of suffocation."

"Yes. I see that. But to find them working machines—and such machines—just staggers me."

"But why? It's just their natural way out of the difficulty. After all, we did the same. Where would man have been without his machines? If you want a parallel, just think of one of the warships of your own time—twelve hundred or more men, working a great, floating monster, just as these insects in their thousands work their scuttering metal machines. It puzzles me that I didn't think of it the moment we saw the style of their machines. These things always seem so obvious afterwards."

Roy nodded. "But still, I would never have believed if I hadn't seen," he added.

A rattle of falling dirt startled the group. They looked apprehensively upward. A shining metal tentacle protruded through a small hole in the roof. An increasing rain of debris pattered all about them as it moved from side to side, enlarging the aperture.

CHAPTER VI

"Into the Tunnels!"

● Kal's tube sent a shaft of heat shooting up. Either from haste or misjudgment he had it notched at full power. The tentacle was melted off and fell, but the heat beam had seared on into the roof. There came an ominous cracking and the men, with a startled glance, took to their heels in the direction of the escape tunnel. Almost as they drew clear, the weakened spot gave way and the machine, with an avalanche of dirt, crashed to the floor.

Even as it broke open, rivers of ants came swarming out of the gaping seams. With a second crash another machine fell through the hole, and after it, another. It seemed that the insects cared little how many machines were wrecked to secure the victory.

"Into the tunnel," shouted Del. "We must risk it now."

The rest scampered to obey, holding their precious burdens in their arms. Kal charged ahead with his weapon held ready and his short legs moving with twinkling rapidity. The rest followed him closely. Roy heard a howl of agony break from the two "Numen" as their bare feet encountered the hot surface, but their fear of the ants was greater than their discomfort and they held on their way.

The heat of the passage was intense; it beat at them like a furnace glare. Jessica staggered just ahead of Roy. He caught her around the waist with his free arm and dragged her on. The two of them pitched together over the outer edge into the daylight—he had forgotten that the slant of the tunnel meant a six-foot drop at the other end. Del had remained till the last. He rayed furiously at the increasing horde until he was sure that his companions were clear, then he too, turned and ran for safety. He fell from the tunnel mouth, narrowly missing the prostrate Roy.

"Only a dozen yards of that inferno," said the latter, sitting up. "It seemed like a hundred. Anyhow, it's a sight too hot for the ants to get across it. We're clear of them for a bit."

Del agreed, but he wished to make sure.

"Lift me up on your shoulders," he directed. Roy did so, and the dwarf played a narrow ray on the sloping passage roof till it fell, completely closing the entrance.

"Any casualties?" Roy inquired as he lowered the other.

"No, except these two," Jessica pointed to the two "Numen" who were sitting down ruefully examining their scorched soles. "And they're more surprised than hurt. I should think," she added, "that the vacuum tubes have suffered."

A hurried inspection revealed that only one had been smashed.

"And now, where do we go from here?" Roy asked Del who, by general consent, had become director of the party.

"We get away very quickly before they realize what has happened and start a search for us," Del replied.

It took but a short time to cross the open ground and gain the cover of the forest. Roy, looking back for a final view of the rearing cliffs which was the side of the stupendous ant-hill, was relieved to discern no signs of pursuit.

● Several hours of heavy going found them a weary party. The three dwarfs had very soon given out; their small bodies were of little use for this kind of rough going. One of the "Numen," noticing their distress, handed his bundle over to his fellow and, as though it were the most natural thing in the world, raised Kal and Ril to his broad shoulders. The other placed both bundles upon one shoulder and seated Del on the other.

"That proves it," declared Kal as he recovered from his surprise. "These are the descendants of Tak Four A's 'Numen.' Brawn, developed to assist brains."

For some miles they had proceeded along the bed of a stream with the dual purpose of losing the scent and of making slightly easier progress than was possible among the trees. On a corner the leading "Numan" stopped short. Roy craned round him to ascertain the cause. He found himself staring at one of the six-legged machines. It stood motionless on the grass verge of the left bank, glistening in the sunlight.

Del pulled out his tube, but as he levelled it the machine became aware of them and scurried swiftly sideways. For a moment it paused, waving its tentacles slightly as though uncertain whether to attack or no, then it flashed away into the trees and out of sight.

"Damn it," said Roy, as he watched the last glitter of the receding shell. "It will give the alarm." Rather bitterly he added. "Why didn't you melt the thing?"

"Because I had no desire to set the whole forest on fire," Del replied calmly.

Tired as they were, they pressed on with greater speed. They must, Del pointed out, reach some defensible spot. While they remained among the trees they were liable to concealed attack from any side. Another two hours brought them to a district where open spaces were more frequent, but still Del was unsatisfied. At the edge of a sizeable clearing, Roy struck.

"Jessica's pretty dead beat, Julian's very little better, and I've had enough, too. We'll find nothing to beat this. If we camp in the middle, we can defend all round."

Julian upheld the suggestion in a tired, dispirited voice. Del opened his mouth, but before he could speak there came an interruption:

"Get into the trees, you fools," roared a voice.

For a second nobody moved.

"I mean it," called the voice, somewhere above their heads. "They're coming after you. Get moving."

The tone was so insistent that this time they obeyed without question. As Roy, who was the last to climb, swung himself up the branches, he heard the approach of a multitudinous scuttering. Looking down he could see the flashing surfaces of a dozen or more passing ant machines.

"Close call," said a voice above him.

"Certainly was—it'd have been a damn sight closer if you hadn't been about," Roy answered softly.

"It's all right. You needn't whisper. Those tin things can't hear. I've tried 'em. What's more, they're too dumb to look for anything up above 'em. You're safe here."

Roy leaned back and looked up at the speaker on his higher branch. He was a man of knotty, compact build clad in a torn shirt and ill-used khaki pants. The greater part of his face was hidden beneath an unruly growth of black beard and whiskers, but his mouth smiled, and there was a restful twinkle in his eyes. Roy climbed higher and stretched out his hand. It was taken in a hardened, callousod grip.

"You can't guess how glad I am to see you folks—whoever you are. I'd just about decided that I'd got the world to myself—save for them crawlin' tin cans down there. I'm Jim Hollis. About four days ago I was somewhere near Indianapolis—the Lord knows where I am now."

● Roy introduced himself. He added:

"Do you know of any safe place for us? We're mostly about played out."

Jim Hollis scratched his chin reflectively through his matted beard. He cast a glance towards the sun, now well in the west.

"Can you make two miles—maybe, two and a half?" he inquired.

"If it's worth while, I guess we could manage that."

"It's worth while, all right. There's some caves I found in a cliff over there"—he jerked his head in an easterly direction—"I'd be there now, myself, but I couldn't make the entrance on my own. Way up above my head."

"It can be defended?" asked Del from a branch near by.

The man looked curiously at the dwarf.

"Sure," he agreed, "but it don't need it. If I couldn't make the grade, I'm damned if one of them tin things could do it. If we're goin', we'd better move right now. It'll be sunset in a couple of hours."

He swung himself down the branches and dropped to the ground. The rest of them followed his lead. The dwarfs' true proportions were revealed as they descended to the ground. At the sight of them and the accompanying "Numen," the man's eyes widened with amazement.

"Say, what the——?" he began.

Roy tactfully interposed.

"Lead on," he said, "I'll tell you as we go."

"You'll have to. I'm all dazed up. It's all happened so sudden-like. I was just hiking along hoping to jump a truck ride to Indianapolis, when a guy comes out from a shack by the roadside and says he'll give me five bucks if I'll lend him a hand. I'd mostly forgotten what five bucks look like, so I said I would. He'd got a piece of machinery he couldn't move by himself and he wanted it brought out of the shack into the yard.

"Rummy lookin' sort of cage with a sling seat in it. We got it out easy enough between us and then he went back to find the five bucks, so I sat down in the sling seat. There was a lot of little switches and thingummies in front of it, so I pressed one, just interested like—next thing I knew, me and the machine was crashin' down through a lot of branches like these."

He looked disparagingly at the growths about him. "And they ain't even ordinary trees. Nothin's ordinary around these parts—what's more, I ain't got my five bucks."

Roy attempted to explain the situation and to tell how the rest of them had similarly come to grief. The man, Jim, grunted doubtfully:

"Sounds crazy to me," he observed, "but then, it's no crazier than having them tin things runnin' about the place. Ants inside of 'em, you say?"

"Yes, ants."

Jim sniffed. He was still a trifle uncertain whether this might not be some deep scheme to pull his leg.

"And what about the big red things that walk on two legs? What's in them? Black beetles?" he inquired.

Roy had forgotten the red machines. He smiled at Jim's suggestion and admitted that none of the party had yet had an opportunity of investigating these inhabitants of this strangely transformed world.

Jim's estimate of two miles was modest by half, but they came at length, and without molestation, to the edge of the forest. Across a hundred yards of turf rose a cliff-face, pitted in many places with dark holes.

"How's that?" asked Jim, triumphantly pointing to the largest. It measured some ten feet in diameter at the entrance.

"But how do we get there?" Julian objected, looking at the twenty-five feet of sheer cliff which must be scaled.

"Easy enough to reach it by standing on one another's shoulders."

"I have a better idea than that," Del remarked.

He produced a ray tube and with a series of heat jets, drilled a zig-zag line of holes up the rock face.

"Gee, that's a dandy flashlight you've got," Jim murmured admiringly.

Roy ascended the holds after a short interval for cooling. As a precaution he took with him a heat ray set ready at low power. The first glance showed him that

the cave was both empty and dry. It broadened out to about fifteen feet a yard or two inside the entrance, and ran back nearly thirty feet into the cliff. Luck had favored them with an ideally safe refuge. He stood up at the mouth and looked out towards the setting sun.

"It's o. k.," he called to the group of upturned faces. "Come on, all of you. Back to the Stone Age."

CHAPTER VII

In Search of Metal

● "The problems of food and water have been easily settled," said Del, addressing the group on the following day. "It is indeed lucky for us that fruit grows in such profusion. But though this will keep us alive, it will not assist us to solve the problem of our return. For that, one thing is essential—we must have metal."

Roy looked up from his occupation of plaiting creeper strands into a rope.

"I was wondering what you intended to do about that," he remarked.

"What's the metal for?" asked Jim.

"We must have a framework for the machine which I propose to build—and it must be a metal framework. You want to get back, don't you?"

"Sure I do. That guy still owes me five bucks."

"What kind of metal?" Roy inquired.

Del shrugged his shoulders. "A steel containing chromium and tungsten in small quantities would be best—failing that, some other hard metal could be made to serve. I also want some copper, or other good conductor. Very luckily, most of our salvaged parts have withstood the journey." Turning to Jim, he added: "Is your machine still in the branches where it fell?"

"No—the tin things found it and carried it off. I watched them from a tree."

Reflectively, Del looked out of the cave towards the giant ant-hill towering over the trees in the distance. Jim's arrival accounted for one of the extra time travelers they had seen there, he wondered about the others . . . Jim's voice broke in on the unprofitable speculation.

"Maybe, if we scouted round a bit more, we might find a town or something. Anyway there ought to be a road leading to a town—where there's a town, there's sure to be metal."

Del shook his head gently.

"You don't realize. There are no towns."

"No towns?"

"Neither towns, nor men."

"You're foolin' me. They can't all be dead."

"They must be, or the insects would not be ruling."

"But—but do you mean the ants have killed all the men?"

"It seems unlikely. Probably men just stopped."

"I don't get you?"

"Men did not kill off the great reptiles who ruled the world before them—the reptiles just stopped. It seems to me that man, too, has 'had his little day and ceased to be.' "

"But what's the good of his ever having lived if it all finishes this way?"

"What is the use of life? Perhaps man came to a glorious finish. Fulfilled his destiny and vanished from the earth—he had to leave the earth sooner or later. At least he has not been compelled to linger on a globe drifting into senile decay."

"It doesn't look decaying to me." Jim gazed out at the gently swaying trees.

"But we found ourselves in a desert when we stopped. Miles of it, overlaying what once was fruitful country—how far did that desert stretch? For all we know, this may be an oasis of forest in a world of deserts. And have you noticed the sun—how much larger and more fiery red it is than our accustomed sun?—Signs of the coming end, both of them."

He was silent for a moment before he added: "Then there was the ant machine which questioned us. Its knowledge of the past must have been profound, yet it tried us with a series of symbols utterly unknown to any of us. One wonders what strange creatures used those symbols, sometime between the end of man and the rise of the insect. Yes, we are far past the age of *homo sapiens*."

● No one spoke for a while. It was Roy who broke the spell.

"This is morbid," he declared. "Our present concern is to regain the age of *homo sapiens*—and our immediate need is metal."

Jessica, sitting beside him, drew a breath as though to speak, and then changed her mind.

"Yes?" he encouraged.

"I hardly like to suggest it—I mean, it's dangerous."

"What is it?"

"Well, the ants' white machines——"

"Yes?"

"Well, they must be made of a very hard metal."

Roy brought his hand down on his knee with a slap of approval.

"Good girl, you've hit it. We've got to grab one of those machines somehow or other."

The expeditionary force eventually comprised only three men, Roy, Jim Hollis and Julian. The two "Numen" would have been useful, but, since it was considered unwise to trust them with heat rays, they would have been defenceless in case of an attack. They would, therefore, be summoned later to help with the portage, if necessary. Moreover, it was important that some weapons should be left with the rest of the party in case of trouble. Both Roy and Jim, before they left, were handed high power rays and instructed in the use of them. Julian retained his own, low power weapon.

"What puzzles me, is how we are going to attract the things," Roy said.

"Forget it. There's no attracting needed. All we've got to do is get up a tree near a clearing, and wait. They'll come along soon enough. It's dollars to doughnuts we spot some within a couple of hours. Them tin things are for ever snoopin' around—the Lord knows what for."

They progressed cautiously with Jim in the lead, scanning the surrounding growths for the slightest sign of a metallic flash, and ready to jump for the branches. The chosen clearing, a mile or so distant, was reached without alarms. There, they climbed one of the loftiest trees and settled themselves among the boughs to wait.

After an hour of patience, Roy caught the sound of activity on the far side of the open space. As it approached, it resolved itself into a crackling of branches

accompanied by a faint clanking. He moved into an attitude of readiness and slipped the ray tube out of his pocket. Jim put out a restraining hand.

"It's not the tin things. It's the big, red brutes. I know the sound of 'em."

The next minute proved him right. Five of the twenty-foot machines left the trees and stalked stiffly on their trellised legs across the other end of the clearing.

"Five again," Roy murmured.

"Always five together—never more, never less. And if I know anything about it, it means that some of the ant machines are around these parts," Jim replied.

Less than ten minutes after the red stalkers had disappeared, there came a flash of reflected sunlight among the trees. A moment later, no less than ten of the six-legged machines emerged. They paused in a bunch and there was a great waving of silver tentacles. Roy wondered why it was that the machines were not rendered less conspicuous with a coating of neutral shaded paint—it was merely one of many puzzling points about them.

As a result of the conference, the party broke up. Eight scurried away in the wake of the red monsters, another doubled back the way they had come while the remaining one retreated to the shadow of the trees and stood motionless. Jim nudged Roy.

"There's our meat," he said.

● With stealth and care they wriggled back along the branches and slid to the ground. Keeping twenty or so yards back from the edge of the clearing, they began to work round into position. The fact that their progress was accompanied by a considerable crackling of twigs underfoot, did not worry them, but it was essential that no waving of bushes, carelessly brushed aside, should attract the attention of the sharp lenses. Moreover, a look out must be kept for other roving machines. At fifty yards range, Jim suggested that they take to the trees again.

Roy, through a leafy gap, trained his ray on the motionless sentry, and pressed the catch. His aim was good. A quick switch of the wrist from left to right, and the narrow blade of heat scythed the legs from beneath it. It fell with a thud. The tentacles writhed for a few seconds and then dropped to lie listlessly on the ground. As they sank, the ant army came surging from its fallen craft. Roy swiftly adjusted his tube to lower power and wide aperture and joined Jim and Julian who were already fanning their beams at the black flood. In a few moments the insects had withered from sight, and the damaged machine was theirs.

Roy swung down from the tree and advanced with his tube cautiously levelled against the possibility of another rush of ants. He tapped experimentally on the metal casing, but none emerged. Again he set his ray to a small aperture, preparatory to slicing the metal into portable sections. Barely had he raised the tube when there came a cry from Jim who pointed widly across the clearing.

Roy spun round to see two more white machines headed in a scuttering dash towards him. He swung his ray without hesitation and brought down the leader. Its own momentum sent it sliding a dozen yards on its shining belly. As it fell, he turned his attention to the other. But the second attacker was not destined to fall such as easy victim.

He was raising his hand when a metal tentacle from behind him snapped around his body, knocking his weapon spinning towards the trees. He realized as the arm gripped him that he had been fooled. Some of the ants remained in the first machine and had successfully played 'possum until this moment. He cursed himself for not having the foresight to put its lenses out of action.

The trees behind him literally exploded into flame as the tube fell among them. Jim and Julian leaped from their perches with lightning agility and came pounding to Roy's defence with ready weapons. The last, unharmed machine, dashing on with tentacles extended, was almost upon him. Their line of fire was masked by Roy's body.

He tugged frenziedly at his metal bond, but it had frozen into inflexibility, holding him as prey for the other. Jim decided to take a desperate chance. He steadied and aimed. The searing heat beam passed within inches of the helpless Roy and the hot air scorched his face, but the blast passed on to shear the legs from one side of the rushing monster. The unsupported side fell with a crash and the machine swiveled wildly to one side. It rolled over and over till it came to a final rest within a yard of Roy's feet.

But the danger was far from over. Jim bounded towards him; fused the restraining tentacle at its base and dragged him free just as the swarming ants broke from their wrecked craft. Only then did the three men become aware of the great flames licking out from the blazing trees towards them.

"We've got to get out of this, and quick. We've sure started something this trip," said Jim, as Roy unwrapped the severed tentacle. "The Lord knows what that tube will do now it's on the loose. Anyway, all the animated tin cans in this crazy world are likely to happen along, just to see who's been jokin' around here."

"But the metal——"

"Damn the metal. There's plenty more—we can't move fast and carry the stuff. Till this blows over, we go home and lie doggo for a bit."

The three crossed the clearing at top speed. In the shelter of the opposite trees they paused to look back. A vast funnel of flame was belching into the heavens and, above it, thick gouts of smoke broadened, mushroom-like. Jim shook a rueful head.

"Ain't that just our darned luck?" he growled.

CHAPTER VIII

The Wrong Machine

● There followed several weeks, uneventful to the castaways. Roy and Jim had returned to the scene of their fight on the following day, and made encouraging discoveries. The first was that the fire started by Roy's lost tube had spread only a very little distance beyond its raging center. With no wind to fan them, the flames had dwindled away and finally snuffed out. The tube itself was irretrievably lost somewhere in a crater of its own making. It had melted the ground and the rocks beneath it and sunk out of sight into the molten pool. Whether it had destroyed itself, or whether it was still digging deeper and deeper into the earth, neither of the men knew—nor cared to any great extent. They were far too elated at finding that the machines they had vanquished still lay where they had fallen.

"Wonder why they haven't taken them away?" Roy had said. Jim snorted.

"You're always wondering about the things. What's the use of tryin' to get inside an insect's mind, anyway? You couldn't do it in a lifetime. Probably they never repair—only build new machines. The thing that counts now is that here is the metal just waiting for us to carry it off."

With the help of most of the party, the transport had been successfully accomplished. Though more than once on the journey it was necessary to drop their burdens and take to the trees to avoid wandering machines. A growing acquaintance with the dangers of the world about them and with the limited capabilities of their enemies began to have a tonic effect on the party. Jim Hollis had never shown anything more than contempt for what he called "animated tinware," and the rest were fast adopting his point of view.

Del, with Kal for an assistant, had gone to work right away on the construction of a new time traveler once he had assured himself that the metals were suitable. Ril, whose offers of assistance had been refused on the ground that more than one helper would lead to confusion, busied himself in experimenting with the least damaged of the captured machines, a pursuit in which he was joined by Julian. Jim Hollis was appointed head of the foraging staff and, with the help of the two "Numen," saw that a plentiful supply of fruit and water was maintained.

Jessica and Roy found themselves much together. Since the ant machines were seldom to be seen in the immediate vicinity of the cliffs, they had formed the habit of taking their strolls in the neighbourhood. Roy, after a month or more of this existence, had come to accept their way of life as a commonplace rather than an adventure. He discovered with a sense of surprise that Jessica did not share this view.

"How long," she asked him one morning, "how long will it be before Del completes his machine?"

Roy looked at her doubtfully. There was something in her tone that he could not place. It was not exactly an eagerness for release from this strange world, and yet . . .

"Not more than a day or two, now, I believe, but he is not sure that some further adjustments won't be necessary. You're feeling homesick?"

Jessica failed to reply for a moment. She held her gaze fixed straight ahead and there was a slight petulance in the line of her mouth. At length she answered in a dull voice:

"I suppose I am. After all, one could hardly wish to stay here for ever. Sometimes, at nights, it comes over me in a perfect wave of longing. I look out and see nothing but the dimness of the stars and hear nothing but the stirring of the trees, then I long for our bustling twenty-third century. I want to see the sky split by the green fire at the tail of an Asia-bound rocket, or the red gush from the Europe express.

"Sometimes, on clear nights, we could see from our house the pure white flames streaming from the Mars space ship as it spurted from its cradle. And then, too, there was never this terrible quiet. Even when one was shut away, there was always a sense of movement; of a world where men and their machines all worked to some purpose—a rustling sense of life even in the quietest places. I feel a horrible sense of futility that it has all come only to this—to the insects."

● "I'm sure you are wrong there. If we had found men still existing at this date, I should feel that it did seem futile. It would mean that man must die when the world dies. But, since there is no sign of him, I am convinced that he achieved his true end—whatever that may have been—and gone on his way, leaving the world to other forms of life so that they may achieve their ends."

"I think you are an optimist, Roy, but I hope you are right. I confess I don't feel very cheerful about anything just now."

"While I seem to feel happier than I ever remember—I could almost hope that Del's machine should turn out a failure. I wish . . ." He stopped a trifle abruptly. A light crept into Jessica's eyes. The corners of her mouth lifted ever so slightly.

"Yes?" she prompted gently. But Roy was not looking, he did not see the change that had come over her.

"I don't know. It seems so unnecessary that we should go back to our own centuries—and yet, we must."

"Must?"

"Well, imagine what a misfit I should be in Del's century."

Jessica sighed to herself over the obtuseness of men.

"I can't imagine you in Del's century," she said.

But Roy missed the emphasis which was laid upon the word "Del," and took the statement at its face value. Jessica let the subject drop. She had learned what she wanted to know, the rest was a matter of careful handling—she might even have to propose herself in the end.

Half an hour later, as they were returning to the cave, Roy announced that there was a surprise awaiting her. Ril and Julian in their experiments with the captured ant machine, had succeeded in making it workable. The machinery cased in the lower part of the ovoid body and partitioned off, had been found to be intact. It had not been a great labor with the help of the heat rays to braise on salvaged legs in place of those shorn away.

Then, more to give themselves employment than for any other reason, the two men had set about adapting the controls for human use. They had given themselves to the solution of a number of ingenious problems which turned out, in most cases, less difficult than they had expected. Much of the work consisted merely of clearing away many of the stages necessary for insect manipulation.

"What I mean is," said Roy, explaining, "a man might need a block and tackle to lift a heavy log which an elephant would lift direct. This time, Ril and Julian were in the position of the elephant—they could dispense with much of the intermediate mechanical aid. They're as pleased with the thing as a child with a new toy. It's going to be ready to show off its tricks when we get back."

"But what's the good of it?"

"None, I think. They merely felt an interest in the thing, and it gave them something to do. They solved it as one might solve any other puzzle. You'll see it soon."

His words were borne out a few hundred yards from home. They saw the glittering machine approach, slowly scrabbling over the ground towards them. It stopped as they came into view and stood still, its tentacles waving in the usual manner of the ant-operated craft. Roy gave a chuckling laugh.

"A pretty good imitation. If I hadn't been expecting

it, I'd have rayed the thing right off—and that would have been remarkably uncomfortable for Ril and Julian."

As if at the thought, his hand went to his belt. It encountered the butt of his revolver, but the ray tube was missing. He cursed his carelessness in not bringing it; such an omission might well have had tragic results. He and Jessica advanced together.

"Now, Ril, put it through its paces," he called.

But the machine merely continued to stand, swaying its tentacles. A sudden misgiving shot through Roy's mind. To reassure himself he called:

"What are you trying to do? Scare us?"

Jessica drew closer to his side. She was aware of an uncomfortable sense that all was not well.

"Suppose it isn't——?" she began. She got no further, for at that moment the machine snapped into action. It came scuttering full at them, tentacles outstretched.

"Run," cried Roy, but instead, she shrank towards him.

● He jerked out his revolver and spat a burst of ineffective shots. The machine charged down on them. A feeler wrapped about Jessica's waist and snatched her from his side, another looped about his wrist, dragging him along. With a violent twist of his arm he broke its grip and fell to the ground. Jessica screamed as the metal legs thudded past within inches of his head. The machine did not wait to recapture him; holding the girl clear of the ground, it made straight for the trees. Roy grabbed for his fallen revolver, jumped to his feet and raced vainly after it. The danger of hitting Jessica was too great for him to risk a shot, and the machine, looking like some great, shining beetle, was traveling twice his speed. The girl gave one final, despairing cry, then captor and captive disappeared among the branches.

For a few dazed seconds Roy continued to run, before his senses reasserted themselves and sent him shouting in the direction of the cave. Consternation reigned in the group as he panted out his news.

"Give me a ray tube," he demanded. "I'll wreck that machine and bring Jessica back, if it's the last thing I do."

Del caught his arm.

"You could never catch it before it reached the ant-hill, and it's no good trying single-handed to——"

Ril broke in. He had exchanged a hurried whisper with Julian which sent the other running towards the cave.

"We'll take the machine," he said, "Julian and I have finished it and tested it."

Roy, without hesitation, dashed to the spot where the renovated craft lay and started hurling aside the branches which masked it. Ril clambered up a rough ladder set against the side and slid into the interior through a hole in the top.

"Tubes—we must have them," Roy called.

Del handed over two high power tubes and one low one. The only remaining tube he retained in case of attack.

"Get the girl back and we will go," he said. "The time traveler will be ready when you return."

Julian came running back with an armful of additional apparatus which he lugged aboard. Roy slid in last and slapped the covering panel shut. Ril and Julian were already at the controls. The machine stirred with a slight lurch, then, with metal legs flashing in the sunlight, it scuttered at full speed for the trees and the spire of the giant ant-hill beyond them.

CHAPTER IX

Pursuers

● For the first hour silence was scarcely broken. Ril could spare no attention from the delicate occupation of steering the unfamiliar machine, and Julian was engaged in arranging some of the apparatus he had so hurriedly gathered. Noticeable among it was the lamp which they had used to light the cave. Roy moved restlessly about the confined space, peering through one or another of the observation holes which had been pierced in the metal shell. Continually he turned to urge Ril to greater speed. The dwarf shook his head. Already they were at the speed limit of safe travel, and time and again he avoided a crash with some tree only by the swiftest dexterity. The greatest concern which beset him was lest they should reach some unfordable stream and be forced to a long detour, but the fear was unfounded.

The first water they encountered was a clear brook flowing rapidly over a shallow bed of stones and, without hesitation, they took it in a shower of sparkling drops. As they were mounting the further bank, the first untoward incident occurred; there came a mighty crash to one side and a tree toppled slowly. It missed them as it fell by only a few feet. Another crash close at hand caused Ril to steer the machine hastily to the right. Roy was flung to the floor by the sudden change of direction.

"What was that?" he demanded, as he scrambled up.

"Rocks," said Ril, briefly. "They nearly got us, too."

Roy remembered the scene they had witnessed on the day of their arrival.

"It's the red things. They've spotted us. Here, give me a ray."

He thrust his head and shoulders out of the top panel and looked about him. No enemy was visible, but away ahead he could hear the crackling of branches as something drew nearer.

"Coming this way. Move off a bit."

Ril obeyed speedily and a moment later a rock landed on the spot where they had paused. Roy guessed that they must have been seen as they made the crossing and that the rocks were being thrown by guesswork. A red machine stalked into view and halted uncertainly. The silver ant craft was now effectively screened from its view by a clump of bushes.

A second presently joined it. Roy hesitated only for a second—with Jessica still at stake, they could afford to waste no time; he lifted the ray tube. One sweep sliced off a trellised leg and the machine, as it tottered, fell against its companion. The two swayed for a space and then went down together with a resounding crash and a furious flailing of their jointed arms.

"Right away—flat out," Roy called, and Ril threw in the lever which sent them scurrying on their course.

The red machines were about the countryside in unusual numbers, they discovered as they continued, but further direct encounters were successfully avoided. Moreover, as they drew nearer to the ant-hill, they began to meet with an increasing number of machines similar to their own. These, at first, they gave a wide berth, but it soon became obvious that they had no need to fear molestation, since the ants gave no sign of suspecting their presence.

They were still some two miles from the hill when Roy, at a forward peephole, gave an excited cry. Disappearing into the trees on the far side of a clearing he had

caught a glimpse of Jessica's captor with her form still closely wrapped in its tentacles. Ril urged them at full speed across the open ground and plunged into the forest hard on the track. But, despite his utmost efforts, it was not until they emerged into the space ringing the base of the anthill that they caught another glimpse of the marauder.

Their gain had been appreciable and Roy decided to risk a ray flash; they could not hope to overtake the other before it reached the dark entrance to the hill. His ray, at low power, flashed on the twinkling legs with no result. He pushed the power up a notch and tried again. This time he succeeded in fusing one of the rear leg joints so that the metal limb became rigid. Unfortunately, it projected clear, and hampered progress not at all. The tube was just levelled for a third shot when a hand grasped his wrist and he turned to face Julian. The latter spoke angrily.

"Put that away, you fool," he snapped. "Can't you see that if you did bring the thing down, it would most likely kill Jessica in the fall—even if it didn't, she'd be covered with ants in a few seconds."

The possibility shook Roy badly; he cursed his own foolhardiness as he returned the tube to his belt. Julian turned his back and began to adjust the lamp, now erected at one of the larger spy holes. A minute later the leading machine, still clutching Jessica, disappeared into the dark mouth of the entrance. After it, all six legs threshing furiously, pounded the avenger.

● Julian pressed a switch and a beam of dazzling brilliance bored down the tunnel before them. The vast central roadway stretched out like a dirigible hangar of infinite length. Here and there the upsweeping curves of the walls were pierced with side turnings; mysterious, gaping mouths whose immenseness was dwarfed only by the proportions of the main artery. Of traffic, there was little at the present, but such machines as were visible scuttled along with a methodical orderliness, keeping to the right of the track and paying no attention either to pursuer or pursued.

"Why don't they attack us?" Roy wondered.

"Too specialized," replied Ril. "Their whole organization is worked on a basis of calculation. Precision and instinct. They know, for instance, that there is danger from the red stalking machines outside; that danger is calculated and allowed for. But when they face us, they are up against the incalculable and their instincts are not any help to them. For centuries, perhaps, they have not been called upon to cope with the unexpected."

"But they attacked and captured us in the first place."

"True, but then they were in the open, where dangers might be expected and their instinct was to overcome a challenge. It requires more than instinct and simple calculation to grasp the idea of one of their own machines being turned against them. You notice that even the one we are following has shown no sign of perturbation; it has just kept steadily on its way and paid no attention to anything else."

"Then we are safe from interference? All we have to do is to recapture Jessica when we reach the other machine and march out with her."

Ril looked doubtful. It seemed unlikely that it would be as simple as that.

"We are all right, I think, until we are discovered by the central intelligence. We can't tell what will happen then."

"But how do you know there is a central intelligence?"

Ril lifted one hand from the controls of the racing vehicle and waved it in an expressive sweep.

"Something must control all this. Besides, you remember the machine which wrote on the floor—it was obviously designed for brain work of some kind. It had no legs to move about on. It was a calculating machine—a kind of composite thinking mechanism. Somewhere in this ant mountain there must be a super-calculator capable not only of working from known factors, but of reasoning from probabilities. A kind of central brain of which our questioner was a mere subsidiary."

"It sounds too improbable."

"I don't think so. Since the insects had even more natural obstacles to overcome than man had, they must, of necessity, use more involved apparatus."

While Ril spoke, they gradually gained on the machine ahead. Now a bare twenty yards separated the two. Julian already had his hands on the control levers of the tentacles and was ready to send them coiling out the moment the range permitted. The leader turned with a sudden swerve down a passage to the left. Only by skillful manipulation did Ril avoid overshooting the corner, but he succeeded, and they gained yet another couple of yards. The three men grew tenser as the distance lessened. Julian's knuckles were white on the levers, and his face strained Roy again thrust his head and shoulders through the top panel and held his tube ready for action. Then, with disconcerting suddenness, the passage walls fell away and they sped out into a large, circular hall.

Roy had a glimpse of serried ranks of the white metal machines gleaming and glittering in the rays of their lamp, then his eyes rose to the structure which dominated the whole vast room. It stood, raised on a dais in the exact center—a huge, metallic sphere sprouting with a multitude of shining feelers. At that moment, Julian went into action. Judging his distance to a nicety, he sent a tentacle whipping round one of the rear legs of Jessica's captor.

Simultaneously, Ril slowed their machine and there came a jerk which almost dislodged Roy from his perch. The legs of the leader crumpled beneath it and the shining belly met the ground with a thud. Julian, with the full power of the attached tentacle, began to draw it back towards them. From his vantage point, Roy sliced with a pencil-thick ray at the roots of the feelers which bound Jessica. The whole affair had taken place so quickly that they had been unmolested, but, as the last strand parted, there came an ominous stirring in the ranks of the surrounding machines.

● Ril's voice rose insistently.

"Quick. Get that central globe."

Roy perceived that the many feelers around it had sprung into furiously writhing signals. With sweeps of his ray at full power, he carved it into sections. As the parts fell, he saw the outflow of myriads of ants running like glistening streams of molasses across the floor.

"Too late," cried Ril. "It's given the order."

Roy swung his beam around the closing circle of machines while the tentacles under Julian's control, sought and grasped the prostrate form of Jessica. They snatched

her from the ground a split second before the insects hordes swept to the spot.

"We've got to run for it," Ril called up as he manoeuvered their craft to the right about. "Clear a way to the passage."

The few machines in their path were swiftly dealt with, but, while Roy's attention was taken aside, the rest of the circle was closing in.

"Full speed," he roared down to the dwarf.

They tore forward with a jerk; the light and Roy's heat ray blazing ahead of them. Once in the comparative safety of the corridor, he turned around and devoted his attention to hindering the pursuit. Dozens fell to his ray, but he saw that in spite of his destruction, the mass was gaining. At a sudden idea, he thrust the power of his tube down a couple of notches and gave an exclamation of satisfaction at the result. The machines, instead of being blotted out, were now being fused into immobility and presenting considerable difficulties to the advance of those in the rear. A second inspiration struck him and he called to Ril to slow down.

He swung his ray across the passage and rendered useless the first rank of the pursuers. As those behind came climbing over them, he swung the ray back along the line so that they were fused above their fellows. Still more came scrambling over and again the ray swept across. A grim smile of success twitched his mouth as he steadily continued his tactics. At great speed he was building a solid wall of fused metal between himself and the pursuers. It was but a short time before it blocked the passage from the floor to the curved roof. The moment it was complete, he jumped to the ground and ran forward to where Jessica's inert form rested in the grip of the feelers. He was thankful that she had been unconscious throughout the rescue. It was the work of a few seconds to strip off the clinging remnants of her captor's tentacles and lift her up to Julian who had taken his place at the panel opening. Swinging himself hurriedly aboard, he called to Ril for full speed. There was no telling how long the fused wall would hold.

The remaining length of passage was covered without incident, or even sight of other machines, but they emerged into the main traffic artery to find a different state of affairs. They had last seen it almost empty; now it was crowded. A number of mechanisms rushed at them with antagonistic intent and were promptly rayed before they reached a dangerous distance. Following them were others, but by no means all the machines in sight were concerned in the attack. The majority continued peacefully to go about their appointed tasks.

Either the alarm had not been intended for all, or else it had been cut short before it became general. Whatever the cause, the result was a great jostling and tangling of machines at cross purposes. The attackers were obstructed and hindered at every turn by the instinctive way in which the others pursued their routine work.

Ril, quick to perceive their advantage in the turmoil of the two inflexible orders, steered to one side and jostled into the stream of outgoing vehicles. The whole procession moved at a steady, uniform speed and they were swept along with it. The attackers, unable to alter the instinctive march, were left with no course but to follow in their wake at such points as they could contrive to wedge themselves into the moving queue. Roy looked round over the moving ranks and realised that they were safe, barring accidents, until the open should be reached.

Within the metal shell Julian was doing his best to restore Jessica to consciousness and looking with anger at the great weals imprinted on her arms and legs. When her abuductor was caught, it had evidently closed its grip the more firmly in a determination not to lose its prey, and she had fainted from the constriction. At last her eyes opened and she looked up at him.

"What's happened?" she asked, attempting to move her stiffened limbs. He explained.

"And Roy?"

At the sound of her voice, Roy withdrew from his observation post and walked forward in the crouched attitude that the cramped quarters demanded. He took one of her hands in both of his and gazed down into her smiling face.

"Thank God you're safe, Jessica. Until that thing snatched you away, I didn't realize——"

Jessica's eyes were starry.

"You didn't realize what, Roy?"

"I didn't realize how much I——"

"Heat rays ready," interrupted Ril. "We're nearly out."

"Oh, damn!" muttered Roy as he sprang back to his station.

In the open, Ril gave the machine full power and sent it tearing away from the main body. Presently the pursuers also drew clear and came scudding in swift chase. Roy picked off the leaders with sharp blasts of heat, but every second more and more of the machines pouring out of the mountain entrance were joining the hunting pack. It became no longer a straggling pursuit, but a solid block of shining mechanisms bearing down. Had the way ahead been clear, possibly they could have held their own in the matter of speed, but, once in the forest, the superior control and the familiarity of the insects with their own machines, began to tell. Roy, with a ray tube in each hand, thanked Providence that no ballistic weapons were known to the ants; he had his work cut out to pick off the advancing units.

"Ahead," cried Ril.

CHAPTER X
Back Home

● Roy whipped round to see a line of machines drawn across their path. A quick switch of the ray served to clear the way, but it also sent a patch of trees bursting into flame. Ril held on and plunged them through the gauntlet of fire. Something fell across Roy's shoulders and half wrenched him from his perch. He turned to find an insect machine racing alongside. It had pursued a parallel course, behind masking trees, and seized his momentary diversion of attention, to cut alongside.

He crooked one arm beneath the metal casing edge in an effort to resist the pull, but slowly he felt his muscles giving in beneath the relentless tugging. Desperately he wriggled the other arm in an attempt to bring the ray to bear. He was thankful that it had not occurred to the insects to snatch at the fast moving legs of the stolen machine.

The pull of the tentacle grew stronger, and he called loudly to the others. He felt a pair of arms clutch his legs. He ached painfully as the machine tightened its grip. Fingers grasped the ray tube from the arm he had crooked below, and Jessica thrust herself up beside him with the tube in her hand. Quick as thought the whole

bunch of tentacles were shorn from their roots. Then, turning it downward, she fused the front legs. The fore end dropped suddenly and the attacker pitched back over front in a final, shattering somersault.

Roy disentangled himself from the wrapping feeler and, side by side with Jessica, went to work at clearing away the nearest of the pursuers. The rays flashed in a furious semi-circle, but the numbers of the enemies were constantly supplemented; it seemed that they must shortly be overcome by sheer, clogging weight of numbers.

"Hold tight, there! We've got to risk this," called Ril from below.

Roy glanced ahead and saw that they had again reached the river. Unfortunately, not at the same shallow spot as they had crossed before. This time, a steep bank must be descended and deeper water negotiated. It would be chancing too much to turn along the bank, for they had no means of telling how far their pursuers were spread out to either side.

The machine slithered down the bank and waded out. The water rose above the leg sockets, but it did not flow through the universal joints. It rose further—to within inches of the observation holes, then, thankfully, they felt the floor tilt up as the stream bed rose. On the farther bank, Roy called Ril to halt. The machines had not followed them. They had collected in a line, hesitant and unwilling to risk a wetting. It seemed that the fugitives were safe. Then, just as Roy drew a breath of relief, one, more intrepid than the rest, came sliding down. Instantly he rayed it and a burst of steam arose from the water around. But the necesary lead had been given. A second later, half a dozen or more were slithering into the water. With no compunction, he played his ray upon them. He hoped by example to stop them from making a mass attack for it would be impossible to check all the hundreds which now lined the bank. But as he vaporized the last of the waders, an interruption occurred. Something came swinging above their heads and landed with a crash on the opposite bank.

"The red stalkers!" cried Jessica, "they're attacking them. Quickly, Ril, get into the trees. They haven't seen us yet."

They scuttered from the danger zone. Under cover of the branches, they stopped and looked back. Indescribable confusion was raging among the machines and at first it was difficult to see the reason. But, as they watched, a net of glittering red metal came sailing through the air and fell upon the white machines. Evidently the red stalkers used rocks only against isolated enemies; when they really went into action, they had other weapons. One net followed another, and with every move they made, the white machines became more hopelessly entangled. From being a collection of perfectly controlled units they soon changed into no more than a writhing mass of a myriad glittering parts, surging frantically this way and that, enmeshing themselves the more as they struggled to escape.

Roy caught a glimpse of the first red biped striding forward, metal nets swinging from its jointed arms.

"Time for us to go," he said.

Ril threw in the switch and they scurried away into the green obscurity of the forest.

● An unexpected sight greeted them at the cliffs. Del's time traveler, constructed for safety within the cave, had been brought out and lowered to the ground. The other five members of the party were clustered round it, apparently in conference over some knotty point. One of the "Numen" let out a cry as they broke from the trees. Jim Hollis swung round with ready weapon. Roy hailed him loudly and the other's face broke into a grin. A moment later the machine came to a halt in the middle of a congratulatory group. The greetings over, Roy asked:

"Why have you brought the traveler down here? Either an ant machine or a red stalker may come along any minute. One stone landing on that would ruin all your work."

Del explained. It was necessary that the traveler be somehow conveyed to the cliff top. A break, less than a mile away, offered ample possibility for men to climb, but the problem of raising the machine appeared hard to solve.

"But why lift it at all?—Why not work it here?"

"Look at the cliffs," said Del.

"Well, what about them?"

"They've been caused by some earth fault and are very recent. If we were to work the machine here, we would probably finish in the part of the cliff now fallen away—the result of that I leave to your imagination."

Roy looked thoughtful. "I hadn't thought of that danger," he admitted.

"Nor did many others—or else they risked it as we did. Many travelers must have been built in the past. I wonder how many of their unfortunate occupants reached this year at the bottom of new seas, entombed in mountains, or even high above ground level. It is nothing less than miraculous that we few survived."

Roy gazed dubiously at the cagework in which all their hopes were centered. His expression cleared; turning to Ril, he asked:

"Couldn't the machine carry it?"

Ril was doubtful. Since the traveler had to contain the whole party, it was far heavier and larger than its forerunners.

"We can try," he said with little conviction.

Edging their captured ant machine close, he wound the four tentacles firmly around the traveler and carefully drew back the lifting lever. The burden lurched slightly, but it did not rise; instead, the white machine tilted forward, its back legs in the air.

"Too heavy in the bows," Jim Hollis remarked. "Let's see if we can bring her stern down."

The combined weights of himself, Roy and the two "Numen," perched at the extreme rear served effectively to change the balance. The traveler was lifted clear of the ground. Very cautiously and slowly, Ril set the legs in motion, and the machine with its load moved unsteadily forward.

Progress to the break in the line of cliffs was slow, but slower still was the tedious climb to the top. Again and again it was necesary to assist the slipping legs of the machine, and to give purchase to scrambling metal claws. Nevertheless their admiration for the adaptability of the machine rose as it overcame successive obstacles, forging patiently and relentlessly up the rough way. All nine of the castaways became increasingly jubilant as the top was neared, even the two "Numen" being caught up in the prevailing high spirits, and wearing grins of pleasure.

As they scrambled at last over the sky line, Roy looked back in triumph at the way they had come. But the sight which met him sent the joy from his face. He called out

and pointed below. Ant machines were scuttling from the trees in a silver stream, racing for the gap.

A few yards more and they were upon level ground where the traveler could be set down. Assured of its safety, he and Jim leaped down and ran back to the brink to meet the attack. Already the leaders were half way up the rough scramble before a fanning of rays sent them tumbling back on their fellows. Unencumbered as they were, they could climb with astonishing agility. And, as ever, they seemed careless of their casualties.

● Once the first rush was checked, it became an easy matter for the two men to hold them back. Jim Hollis made a grimace of distasta.

"How long do we keep this up?" he asked. "It's nothing but a slaughter—even if they are only insects."

Roy glanced back over his shoulder. He could see that Del was already in the traveler, intently setting his controls.

"Not long now. Just until Del gets it all fixed," he returned.

An alarmed cry broke from Jessica. She was standing, pointing along the cliff edge where five red stalkers were advancing with deliberate strides. Roy gasped, for he could see that their jointed arms held nets, ready for use. He heard Ril call to him, and saw that the dwarf was manoeuvering the captured ant craft to face the new danger.

"Your ray tube," Ril cried as Roy joined him. "Hold it up in front."

Wonderingly he obeyed. Ril wrapped a tentacle about the tube and set the appendage swaying slowly from left to right. A red metal net came flying towards them. It fell only a few yards short. Swiftly Ril flicked over a lever which would set the machine marching towards the red stalkers. Then he jumped clear. Roy caught him as he fell, and, together they ran for the time traveler.

The entrance snapped to, and through the trellised sides of the cage Roy took his last sight of the fantastic world. In front, a swarm of silver machines had reached the cliff top and was pouring over the edge. Away to the right marched their capture, mechanically raying at the red giants. One had already fallen, to go hurtling below, but even as the leg was shorn from another, a metal net settled about the lone attacker. A glimpse he had of another red net, sailing through the air towards themselves. Then Del pushed over the switch.

● Roy and Jessica stood in the darkness. Beside them was the traveler. Of the original nine, it now contained only two. Ril and Kal had been returned to the year 10,424, and with them had stayed the two "Numen." Julian had regained his world of 3920, and now they rested at 2200.

"You're determined not to stay?" Roy asked Jim Hollis.

"I am. Twentieth century is where I belong—even if it is a bit over-civilized for me. Say," he added, "I wonder what they're goin' to say back there when I spin 'em this yarn."

"They won't believe you."

"Maybe not, but I'll try it."

The final farewells were exchanged. The entrance closed, and Del set off to deliver his last passenger before he returned to his own future age. Before the eyes of the two, the cage blurred and then, suddenly, was not.

A green streak cut the sky.

"That means we're home," said Jessica. "It was the Asia-bound rocket."

"Home," Roy echoed.

"And we'll never leave it again?"

"Never again." Roy meant the words as he said them. But somewhere at the back of his mind was a hankering, and that hankering would grow.

What civilization, for instance, had preceded the ants? What manner of creatures drove the red stalkers? And, above all, what had happened to mankind?

THE END

THE MAN WHO AWOKE

(Concluded from Page 767)

hours and his ears were strained back for some sign of his pursuers. Sweating, panting, heart pounding, he ran back and forwards in an agony of directionless movement.

Then he became frantic and hurried faster and faster until his foot caught over some piece of stone and sent him sprawling. He rose to his knees and stopped there, frozen, for he heard voices! They were still distant, but he dared not rise. His eyes fell upon the stone over which he had stumbled. It was flat and thick and rather square in outline. Some marks appeared on the top—badly worn by weather. He brushed aside a few dead leaves listlessly, hopelessly and before his startled eyes there leaped the following:

> "Carstairs, a gardener lies here—faithful servant to the end—he was buried at this spot upon his own request."

Buried here at his own request—poor old Carstairs! Could it be? If this grave were directly above his underground chamber then there, only fifty feet to the south, must lie the entrance! He crawled with desperate hope over the soft ground and there, sure enough, was a familiar tree and a leaf-filled depression at its base! The voices were approaching now and he slithered desperately into the hole, pushing the drifted leaves before him with his feet. Then he gathered a great armful of leaves scraped from each side and sank out of sight, holding his screen in place with one hand. With the other hand he reached for some pieces of cut roots and commenced to weave a support for the leaves. He was half done when his heart stood still at the sound of voices close by. He could not make out the words and waited breathlessly second after second. Then he heard the voices again—receding!

Winter came and the frogs found their sleeping places beneath the mud of the little pond that lay where once was the lake. And with the next spring the great tree had commenced spreading a new mat of roots to choke forever the entrance to that lead-lined chamber where, in utter blackness, a still figure lay on a couch. The sleeper's last hazy thoughts had taken him back in his dreams to his own youth and the wax-white face wore a faint smile, as if Winters had at last found the secret of human happiness.

THE END

Science Questions and Answers

This department is conducted for the benefit of readers who have pertinent queries on modern scientific facts. As space is limited we cannot undertake to answer more than three questions for each letter. The flood of correspondence received makes it impractical also, to print answers as soon as we receive questions. However, questions of general interest will receive careful attention.

The Planetoids

Editor Science Questions and Answers:

Thank you for so fully replying to my inquiry relative to the force of gravitation. We are getting lots of information from your readers' "Q. and A." pages.

Has there ever been made an approximate estimate of the combined mass of the asteroids (planetoids) between the orbits of Mars and Jupiter?

If, as is supposed, they are fragments of a disputed planet, it would be interesting to be able to reach some estimate of its size.

Do these planetoids maintain a reasonably constant position along their orbit?

What is the approximate extent of their field in length, along the orbit, and in width?

F. L. Morgan,
Whittier, Calif.

(In the 130 years that have passed since the discovery of Ceres (one of the largest of the planetoids) we have made little progress toward determining the origin of the planetoids. We have discovered more and more of these little bodies, and probably will continue to discover smaller and smaller ones as our telescopes become more powerful.

Thus far about 1000 planetoids have been identified, ranging in diameter from 500 miles to two or three miles. If we assume an average diameter of 100 miles, the total volume would be equivalent to a sphere 1000 miles in diameter. If the average size were 200 miles in diameter, then the total would make a sphere 2000 miles in diameter. Even if all of the planetoids were as large as the largest, 500 miles in diameter, they would make, rolled together, a sphere 5000 miles in diameter. So if the planetoids were originally part of a destroyed planet, that world must have been fairly small, probably of the size of Mars.

The planetoids are spread over a belt of the sky approximately 100,000,000 miles wide. That is, the greater group of them lies between 200,000,000 and 300,000,000 miles from the sun. However there are a few that are as far away from the sun as Jupiter, some 480,000,000 miles. The eccentricity of their orbits about the sun, vary widely also. They vary from .01 to .30. This compares with an eccentricity of .20 for the erratic Mercury, .006 for Venus, .016 for the Earth.

The variation in the angle the planetoids make with the ecliptic vary from practically zero to 34 degrees. The average being about 10 degrees. From all of this evidence the planetoids are strewn very loosely between Mars and Jupiter. No rules governing their size, orbits, etc., have as yet been formulated, and many astronomers doubt that they are the remains of a destroyed planet. Yet their congregation in one part of the solar system, speaks for some such origin, and astronomers in the future may yet prove or disprove this assertion.—*Editor.*)

Guns and Trains

Editor Science Questions and Answers:

If a cannon were mounted on the rear end of a train and pointed in the opposite direction from which the train was going; and the muzzle velocity was equal to the speed of the train, what would happen if the cannon were fired?

Howard Barrucklow,
Adrian, Mich.

(Let us assume the speed of the train to be 60 miles an hour and the muzzle velocity of the gun 60 miles an hour. As the train moves on, the gun, the powder and the bullet or charge are all moving with the train at 60 miles an hour. It is as if they were all one with the train.

Now if the gun be fired, no matter in which direction, the bullet will have a speed with reference to the train of 60 miles an hour. Just as if we on the moving earth threw a baseball, the baseball has a speed with reference to the earth of 18 miles an hour, or whatever velocity we give to it. We consider the earth, ourselves and the ball to be one moving system.

Now if the gun be fired in the same direction as the train is moving, the bullet will speed past the train at 60 miles an hour. In other words, disregarding air resistance, the bullet in one minute would be one mile ahead of the train. Now since it was moving at 60 miles an hour with reference to the ground and the added speed imparted by the powder was 60 miles an hour, the bullet would move over the ground at 120 miles an hour. Of course air resistance, etc., would quickly reduce its speed and bring it to the ground.

On the other hand, if the bullet were fired in the opposite direction to which the train was moving its velocity with reference to the ground would be just cancelled by its opposite velocity imparted by the powder and the bullet, theoretically it would simply drop to the ground as it leaves the gun's muzzle.

Such problems are part of the relativity idea, [illegible] by studying them relativity becomes clearer, for we understand that all motion is relative. We cannot speak of motion or velocity without referring it to some reference point.—*Editor.*)

Conjunction with Venus

Editor Science Questions and Answers:

Will you please tell me when Earth and Venus will be in exact conjunction and how often a conjunction occurs?

D. M. Gottfried,
Falls City, Ore.

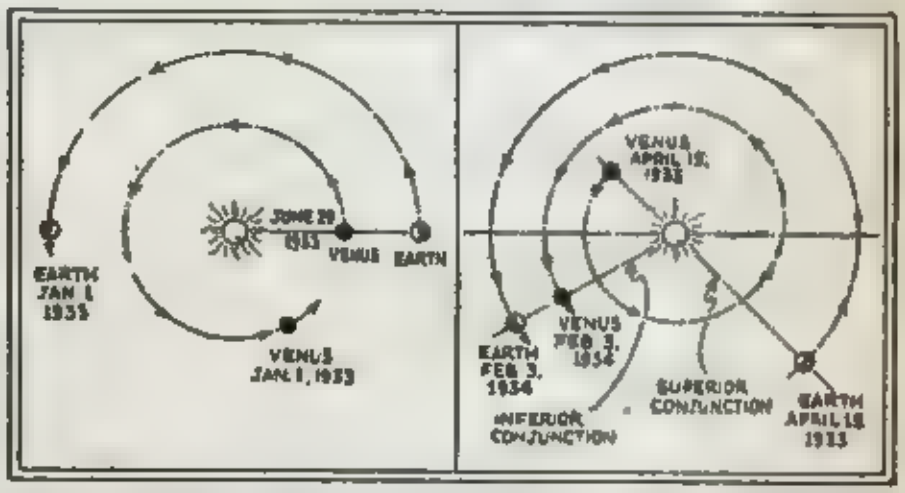
(There is no such thing as conjunction between earth and Venus. The term conjunction as referred to an observer on the earth means that two heavenly bodies are on the same line with the earth, the three bodies forming a straight line. For example, a man on Mars might see a conjunction between earth and Venus. This would mean that earth and Venus were on a line with his planet.

We assume in this case that our correspondent refers to a conjunction of Venus and the sun, meaning that Venus and the sun are on a line with the earth. In other words, when the center of the sun, the center of the earth and the center of Venus lie on the same meridian, an earth observer might say that the sun and Venus were in conjunction.

Now there are two kinds of conjunctions, inferior and superior. When Venus is between the earth and sun, its conjunction with the sun is inferior; and when Venus is on the opposite side of the sun, conjunction of Venus with the sun is superior.

The reason for these changes of position lies in the different orbital periods of the planets. For example, the orbital period of Venus is 224 days and that of the earth is 365 days. If, therefore, Venus is in inferior conjunction with the sun, which means that Venus, the sun and earth are on a line and Venus is between the earth and the sun—then Venus and earth are neck and neck in their race around the sun. But Venus swiftly moves ahead of the sun, it sweeps out 1 degree 36 minutes of arc per day, while earth sweeps out only 59 minutes of arc. Venus, therefore, gains on the earth 37 minutes of arc per day. It is easy to calculate therefore that in 292 days Venus will have gained 180 degrees on the earth; in other words it will be on the opposite side of the sun, and therefore the Venus will be in superior conjunction with the sun. In 292 more days Venus will have

(Concluded on Page 800)



The illustration on the left shows the position of Venus and Earth on June 28, 1932, and on Jan. 1, 1[illegible]. It is evident that at the turn of the year Venus was far ahead of the earth in their dash around the sun. On the right we see that on April 15, 1933, Venus will be 180 degrees ahead of the sun, and in superior conjunction with the sun. As the race continues Venus gets further and further ahead until on Feb. 3, 1934, it will have gained a lap on the earth and will be in inferior conjunction again with the sun.

READERS

If you like "Science Questions and Answers" in this magazine, you will find in our sister magazine, EVERYDAY SCIENCE AND MECHANICS, a similar department, greatly expanded called "The Oracle." Look for it, you science fans!

IN THIS department we shall publish every month your opinions. After all, this is your magazine and it is edited for you. If we fall down on the choice of our stories, or if the editorial board slips up occasionally, it is up to you to voice your opinion. It makes no difference whether your letter is complimentary, critical, or whether it contains a good old-fashioned brick bat. All are equally welcome. All of your letters, as much as space will allow, will be published here for the benefit of all. Due to the large influx of mail, no communications to this department are answered individually unless 10c in stamps to cover time and postage is remitted.

A Discussion About God

Editor, WONDER STORIES:

I am writing this letter for two reasons. First, I want to tell you how much I enjoy Wonder Stories. Messrs. Clark Ashton Smith, A. R. Hilliard and Stanton Coblentz are among the finest science fiction writers alive to-day.

Second, I would like to stir up a discussion concerning the existence of a creative being, or God, behind the workings of the Universe.

Of those reading Wonder Stories, who believe in a God I make so bold as to ask: "If your reason for believing in a God is an attempt to explain the existence of the Universe, who created your God?"

If the answer is that God has existed for all time, and then some, I ask: "Would it not be simpler to believe that the Universe has existed for all time than to believe in a God?"

It seems to me that belief in a God simply moves the explanation of the physical universe one step farther away. For no one can explain the existence of their God in simpler terms than the atheist explains the existence of the physical universe. Both of their answers are that either God or the universe existed for all time.

I cannot see how people can believe in a life hereafter. Life is a mystery to the scientist but it is not as deep a one as the mystery of energy. Life, according to the eminent scientists of the world today, is a complex chemical action. Several scientists believe that they are nearing the solution to the mystery of life!

George E. Kirkpatrick,
Piermont, N. Y.

(We don't think it is difficult to stir up a discussion of the question our correspondent opens. Discussions about the existence of God have been stirred up time and again in every clime for the last 3,000 years. We might put our ear in, however, to mention that the physical universe is not so open a book to the scientists as it would seem. There are many unexplained even contradictory phenomena that scientists still puzzle over. However, on with the discussion.—*Editor.*)

For American Authors

Editor, WONDER STORIES:

Since I have only been taking your excellent publication for two or three years and I have never had the privilege of seeing a picture of Mr. Gernsback, I would like to request it.

I was glad to see Nathan Schachner returning to your columns. "The Time Express" and "The Memory of the Atoms" were wonderful. Why not have a serial by him and by Edmond Hamilton? Hamilton! There's an author you've been neglecting lately and whose ability is unquestioned. I always look forward to his stories and have never been disappointed.

I hope that 1931 will be a big year for Wonder Stories—in more ways than one. For one thing, get better serials—and by American authors. The only good foreign author whose work you print is Otfrid von Hanstein. "In the year 2000" was your best serial of the year, as "Emissaries of Space" was your best Quarterly novel.

I think your reduction in size is a good thing except for the reader's column. Please keep it as long as possible.

Donald Allgeier,
Mountain Grove, Mo.

(Here's a new slant on the foreign author questions. Mr. Allgeier evidently stands somewhere in between the position of Mr. Biersach and Mr. Hitch, whose letter appears in these columns. Well, who else has an opinion on the subject? Shall we have a high tariff on foreign authors? Shall we emulate the patriotic ladies who declare they will buy nothing French. For your information a picture of Mr. Gernsback appears in the November, 1929, Science Wonder Stories.—*Editor.*)

Report to the Humane Society

Editor, WONDER STORIES:

I have written several letters to the "Reader Speaks Column," but I have never had the occasion to comment about the opinions of readers concerning the stories. However, upon reading the letter in the January, 1931, issue from William Biersach, and noting that the editors invite comment, I feel that I must express myself.

Mr. Biersach states in his missive, "Again we were afflicted with 'After 2000 Years'... by Otfrid von Hanstein. It was an insult to our intelligence."

In the first place, to my knowledge the story has been published in Wonder Stories, but once. Where do you get the word "again," Mr. Biersach? Please take down your volume of Webster (I assume you have a volume) and look up the word "afflict." "To cause prolonged pain of body or mind; distress," is the definition found in my edition. If you were so badly "afflicted" with "In the Year 2000," why didn't you report the story to the humane society of your city? I believe there is a law which prohibits torture. I do not think that the story insulted your intelligence very much. Why would anyone with intelligence expose themselves to "prolonged pain of body or mind," unless undergoing the experience with a definite object of material gain in mind?

Perhaps Mr. Biersach does not realize that a book means different things to different people. To a number of persons a book is merely a handy object with which to chase the cat out of the house. To others a book means entertainment, and still to others, a book symbolizes education. To a great many people, readers of Wonder Stories, a book stands for education. Every story published in Wonder Stories magazine, bears an important message.

Sometimes this message is readily apparent, other times not so readily seen. If Mr. Biersach does not acknowledge the fact it is very likely because he belongs to the group who consider a book an object for entertainment only. Personally I believed "In the Year 2000," to be a great story. This is beside the point however. The fact is, that one story cannot satisfy everyone, a sad fact, but insurmountably true. But, I do not think that any reader has the right to express himself in such terms as "it was an insult to our intelligence." It is pretty hard to insult a man with a great deal of intelligence. If one allows oneself to be insulted by a story of future prophesy—well, draw your own conclusions.

I am glad to read that S. S. Held's "Death of Iron" was not so "positively offensive," to Mr. Biersach. To quote from Mr. Biersach's letter, "... there seems to be nothing except a basic idea..." (referring of course to S. S. Held's story). Mr. Biersach perhaps does not understand the premium which may be placed upon "basic ideas"? If such men as Priestley, Mendelheff, Ramsay, and many others, did not have "basic ideas," you may be sure that the world would not have attained as yet, the height of scientific ability and knowledge which it lays claim to.

Science fiction did not originate in the United States. Long before America was established according to the principles of democracy the idea of science fiction had been propagated in Europe. Today all of the leading science fiction authors are not Americans. A magazine such as Wonder Stories cannot attempt to represent American authors exclusively, seeing that many of the leaders in the field are German, French, English, etc. Therefore, instead of "deploring" the fact that Wonder Stories is creating a policy of having foreign representatives between its covers, I welcome it. Notice I use the personal pronoun "I" not "we." I can speak for myself only, not for the aggregate of science fiction readers.

Keep up the good work Mr. Gernsback! A pioneer must experience all sorts of criticism, both good and bad. Paracelsus was persecuted. So was Galileo. So is Prof. Einstein. However, the names of Paracelsus and Galileo appear on the honor rolls of science. The names of their persecutors do not. Their works live; an everlasting monument to them. The works of their persecutors also live; and everlastingly belabor them.

Kenneth Hitch,
Richmond, Calif.

(Well, we're glad we're not in Mr. Biersach's boots after this. If Mr. Biersach wishes to reply to this seething indictment, he may do so. And it's very comforting anyway to be associated with Galileo, Paracelsus, Einstein and the rest.—*Editor.*)

Wholesale Trash and Then Some

Editor, WONDER STORIES:

This is the first time I am writing to your excellent columns, although I have been a reader ever since the former issues of the twin magazines (by the way, I wonder how many readers remember the good old days of Air Wonder and Science Wonder Stories—?). But, believe me, I would have never thought of writing had it not been for the stories of the last issue.

What has happened to the science fiction writers? To me it seems that they are slacking more and more with the passing of each month. I will tell you in two words what I think of the stories in the January issue—wholesale trash.

What are you going to do about it? You must do something to enhance the interest of your readers or else they will surely drop off, one by one, because of lack of further interest. I, myself, have a few friends who are readers

ON LETTERS

BECAUSE of the large number of letters we receive, we find it physically impossible to print them all in full. May we request our correspondents, therefore, to make their letters as brief and to the point as they can; as this will aid in their selection for publication? Whenever possible, we will print the letter in full; but in some cases, when lack of space prohibits publishing the complete letter, we will give a resume of it in a single paragraph.

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LIST OF PLATES

Plate I. Nude Adult Female
" II. Nude Adult Male
" III. Nervous System of Female
" IV. Skeletal System
" V. Muscular System (Posterior)
" VI. Muscular System (Anterior)
" VII. Vascular System
" VIII Respiratory System
" IX. Digestive System
" X. Male Genital Organ in Detail
" XI. Female Genital Organ in Detail
" XII. Cross-Section of Pregnant Female Body with Child.

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Opposite each page, an explanatory text is provided, and this is in turn illustrated with photographs and drawings to show in detail the different organs and other features of the human body. The book is especially recommended for the use of nurses, art students, to lawyers for use in litigations, lecturers, physical culturists, hospitals, sanitariums, schools, colleges, gymnasiums, life insurance companies, employee's health departments, etc.

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THE READER SPEAKS

of Wonder Stories and who have the same opinion as I. We want more stories like "Exiles of the Moon" or "The Conquerors." More far-fetched plots—the more far-fetched the better we enjoy reading them.

I have an idea. Start a contest inviting the authors, not the readers, to write short stories each having the most fantastic and far-reaching plot the author can possibly imagine. Print all the stories you think are worthy of publication in one issue—one stupendous issue that would revolutionize science fiction by making it the king of all literature. Request that each reader of our mag. should send in his or her opinion as to who has written the best story in that particular issue. The author gaining the majority shall be considered as the "man of the hour" or something like that.

The contest will not only arouse the imagination of our authors but would strengthen the interest of the readers not to mention that it might increase the number of readers. My friends tell me the idea is great and if carried out it would bring some worthwhile results. What do you think?

I guess I will have to prove my harsh opinion of January's stories. "Memory of the Atoms" is an excellent story and is therefore an exception. "The Messenger from Space" is a disgrace to your pages. What does D. D. Sharp know about the elements of the solar system anyway?—nil, absolutely nil. The story was not so bad up to the climax... the end was a great mistake.

Look at the last two paragraphs of that story. Grinstead saves his crew by slowing up to 18.6 miles per sec. which is the orbital velocity of the earth. He asserts that "the size of the orbit of any body traveling around the sun depends on its velocity... the greater the velocity the greater the orbit and vice versa... it is the balancing of centrifugal force against the sun's gravitation." *All disgracefully wrong!*

Orbits do not depend on anything; they were formed by the gradual condensation of the fiery planetary masses billions of years ago and have not changed since. The greater the orbit the lesser the velocity and vice versa. I will prove this: The following is a table of the four inner planets and their orbital velocities.

Mercury—from 23 to 36 miles per sec.
Venus—22 miles per sec.
Earth—18½ miles per sec.
Mars—15 miles per sec.

The further out we go we find the speed of the planets growing less. This is the balancing of centrifugal force against the sun's attraction. The more distant from the sun the lesser the sun's attraction. Therefore a distant planet does not need a greater velocity in order to keep its orbit. An inner planet such as Mercury must have a great speed to compensate for its nearness to the sun.

If Neptune were suddenly to increase its speed through space considerably he would fly off at a tangent because of the sun's weak pull at that distance; if Mercury should decrease its speed it would fall into the sun. So much for that.

"The Synthetic Entity" was a little better than the former but it was utterly devoid of any thought-provoking value. "The Last of the Lemurians" could have been much better had the "dream plot" been more far-reaching in its effects. As to the "Wreck of the Asteroid"—so far, so good.

Wake up, science-fictionists! We want bigger and better stories! New ideas! Wonder stories!

Morris Miller.
Brooklyn, N. Y.

(Mr. Miller, of course, is perfectly right in his criticism. The statement should have read the "greater the velocity, the SMALLER the orbit, and vice versa. . . ." This was doubtless an error of phrasing rather than of knowledge. We feel desolated that our stories did not please.—*Editor.)*

Fact and Fiction Books

Editor, WONDER STORIES:

The January issue of our magazine contains a fine selection of stories. "The Wreck of the Asteroid" is well done and interest increases with every page.

Instead of using an illustration page to start the story why do you not start it on the op-

(Continued on page 800)

Enjoy the Wonders of Nature
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EXTRA POWERFUL MICROSCOPE or BINOCULARS

THIS season you can enjoy outdoor sports by carrying with you a handy pair of pocket binoculars . . . or facilitate your laboratory work by using a microscope of more powerful design. Or you can even keep in your pocket a small telescope which will often come in handy.

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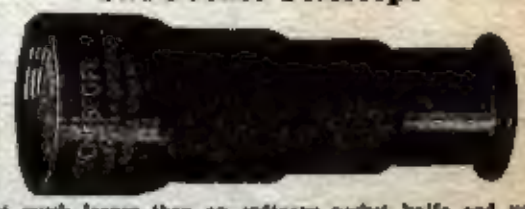

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Description of male sex organs, and their appearance—description of female sex organs and their appearance

Purpose of sex organs—man's part and woman's part—difference between animals and human beings in use of sex organs—legal rights of husbands—a sin in marriage—husband's and wife's attitude—wrongful advice to bride—chastity vs. passionlure, the teacher—the right way to happiness.

The four periods of the sex-act—dangers of haste—dangers of "let-down" to husband and wife—being lovers after marriage—positions—the climax—false ideas of pregnancy—benefits of sex-act—perfect accomplishment an art.

How to go about the first meeting—delay beneficial to virgin brides—having children when wanted—the wife's rights in this matter—discovery of "Free Time" and its importance.

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THE READER SPEAKS

(Continued from Page 799)

posite page as with the other stories and continue what would have been left over on the last page to page 672 of the book review?

I suggest that you review only science fiction and not non-fiction. Leave the science fact books to be reviewed in EVERYDAY SCIENCE AND MECHANICS.

"The Memory of the Atoms" is different from most stories and I liked it very much. "The Messenger From Space"; "The Synthetic Entity" and "The Last of the Lemurians" were all good reading.

Thanx a lot for Paul's picture.

The longer the stories are, the more interesting and well done they are. I don't care for condensed stories. So let's have them long. I prefer three or four long stories to five or six short ones.

Jack Darrow,
Chicago, Ill.

(We review non-fiction science books because we believe that our readers are stimulated by our stories to want more information on science. We provide them therefore with a reading list of new books, from which they can extend their knowledge and understanding of scientific events and problems. We would consider it unfortunate if this phase of our book review department were dropped. What think you, readers?—*Editor.)*

Pleas to a Number of Authors

Editor, WONDER STORIES:

The January issue was excellent but "The Wreck of the Asteroid" was the best tale in the whole mag. Boy, that Manning sure can weave a yarn!

"The Synthetic Entity" was second, "The Messenger From Space" third; with the "Last of the Lemurians" and "Memory of the Atoms" following close behind. I would like to see stories from the following authors in our mag.: Garth Bentley, Jim Vanny, Benson Herbert, Gawain Edwards, M. W. Wellman, J. H. Haggard, A. R. Hilliard, J. E. Keith, J. M. Walsh, and Stanley D. Bell. We don't get enough from Williamson, Campbell, Keller, Hamilton, Simak, Flagg or Miss Stone. And, for heaven's sake give us a tale from Eshbach (he and Williamson are the best authors you have).

What's happened to Gross and Penny, (authors of "Emperors of Space"? Have Schachner and Zagat bust up? Where's A. K. Barnes and his scientist reporter, Darrell?

Now here comes the real object of this letter: in the name of Saturn please tell us what has happened to Lem Gulliver? I get down on my knees and plead to his creators McDermott and Miller to write us another glorious narrative of Lem Gulliver's fantastic adventures.

Edward Camille,
Erie, Pa.

(Unless our authors are completely hardened they surely must respond to the pleas of this ardent reader. Lem Gulliver seems to be stranded in the outer reaches of the solar system, waiting for his creators to rescue him by another good story. That's why you are waiting so long to hear from him. We insist that the story be good—nothing else will do. As soon as it comes along it will be published.—*Editor.)*

BOOK REVIEWS

TOURING UTOPIA by Frances Theresa Russell, 316 pages, stiff cloth covers. Size 5x8. Published by Lincoln MacVeagh, the Dial Press, New York. Price $2.50.

Professor Russell has set herself the task of analyzing, explaining, classifying the Utopian literature from Plato's "Republic" to Huxley's "Brave New World." Her aim is to examine the writings of men who imagined worlds newer and better than those they dwelt in, and to see what promises such worlds held for the race.

Her list is quite complete, the bibliography alone containing some 300 names of books of what we to-day might term "science fiction." It is extraordinary the range of fancy, and mental exploration that men have given way to in the ages. From the day that Plato imagined his perfect "Republic," through Thomas More's "Utopia," Swift's "Gulliver's Travels," the satires of Voltaire and Anatole France; the worlds of H. G. Wells down to the utopias written today, we have had almost every possible society and state of human existence pictured.

The book should certainly be read by all collectors of Utopias; and should be equally valuable to the reader and the writer of science fiction.

SCIENCE QUESTIONS AND ANSWERS

(Continued from Page 797)

gained another 180 degrees and will therefore again be neck and neck with the earth, and it will be between the earth and sun and in inferior conjunction with the sun. In other words there are 292 days between inferior conjunction and superior conjunction; and 292 more days to inferior conjunction again, making 584 days between two inferior conjunctions and the same period between two superior conjunctions. This 584 day period is called the synodical period.

Now on June 29, 1932, Venus was in inferior conjunction with the sun. On April 15, 1933, or 292 days later, it will be in superior conjunction; and on Feb. 3, 1934 (the two latter days accurate within a few days) it will again be in inferior conjunction. The accompanying illustrations show the movements of the two planets about the sun.—*Editor.)*

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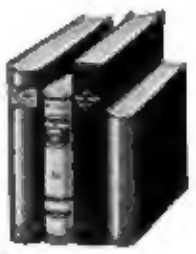

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